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JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

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At the occasion of the XIX International Physiological Congress, held in Montreal, August 31 to September 4, 1953, a round-table discussion was held between an international group comprising some of the most outstanding authorities in the field of inflammation. The formal papers (with many illustrations), as well as the entire informal discussion between these specialists, as registered by the wire-recorder, are presented here in the form of a monograph. It represents an excellent *synopsis of the best contemporary opinion concerning inflammation.*

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(It will be noted that most of the original papers and the entire free discussion are presented in English. The few papers which were submitted in foreign languages are followed by English and French summaries, edited by the authors themselves.)

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 10 1953

CARCINOMA OF THE FEMALE BREAST: CONSERVATIVE AND RADICAL SURGERY

BY

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"I have drawn the impression that in dealing with mammary cancer surgery meets with more peculiar difficulties and uncertainties than with almost any other form of the disease. The anatomical types are so numerous, the variations in clinical course so wide, the paths of dissemination so free and diverse, the difficulties of determining the actual conditions so complex, and the sacrifice of tissue so great, as to render impossible in a majority of cases a reasonably accurate adjustment of means to an end" (James Ewing, 1928).

In 1867 Charles Moore, of the Middlesex Hospital, introduced an extensive operation for the removal of a cancer of the breast. Since that time, through the labour of many surgeons, the operation of radical mastectomy has developed, until to-day Haagensen, after careful selection of cases, requires some five hours to ensure a complete dissection. The argument for radical surgery is simple: the only safety for the patient lies in the removal of every cancer cell from her body. By mechanical means the surgeon aims to remove what he cannot control, and there is no doubt that, with selection and extensive operation, survival rate has improved and local recurrence decreased. The advent of radiotherapy had a double effect on the management of "operable" cancer of the breast: first, it delayed the full study of Beatson's (1896) observations of the effect of the ovarian secretions on breast cancer; secondly, its use as a supplement to radical surgery, by improving the survival rate when the disease has extended beyond the breast into the regional glands, has tempted surgeons to operate when the disease is perhaps too far advanced.

It was in 1922, at St. Bartholomew's Hospital, that Mr. Geoffrey Keynes, at the suggestion of Professor George Gask, began an investigation into the treatment of recurrent cancer of the breast with radium. Impressed by the results obtained, he extended the method to include advanced primary cancer, and, later still, operable cancer, for he was gravely dissatisfied with the results of the radical operation. In a series of papers Keynes (1927, 1937a, 1937b) recorded his experience with conservative surgery and radium therapy. Primarily he hoped to mitigate or abolish the necessity for so drastic a form of treatment as the radical operation, which has a comparatively low absolute cure rate, and a definite morbidity in the form of oedema of the arm and limitation of movement at the shoulder-joint. As he gained experience Keynes maintained that, if the axillary lymph nodes are involved by growth, dissection of the axilla may be harmful, whilst if they do not appear to be invaded their dissection is unnecessary, provided radical irradiation is carried out in every case.

Anatomical investigation has shown no evidence for the centrifugal permeation of lymphatics by cancer cells. Keynes (1952) points out that Handley's work was done on pathological material taken from patients who had died of the disease, and that an abnormal state of affairs was taken as the basis for a system of treatment which was to be applied to all stages of the disease. It is only when the normal lymph channels are blocked that the cancer cell will seek out abnormal channels, such as those described by Handley. Some surgeons have been concerned lest, by dissecting the axilla, they open up pathways for the dissemination of the disease. It may, however, not be a question of opening up new pathways as much as the removal of normal pathways, leaving only abnormal ones for dissemination.

Death from cancer of the breast is almost always due to metastases transported by lymphatic or venous embolism. The recent work of Richard Handley (Handley and Thackray, 1947; Handley, 1952) has shown that, as well as the axillary glands, those along the internal mammary vessels are frequently invaded and can be regarded as immediate regional lymph nodes draining the breast. The internal mammary glands form one of the routes for intrathoracic and more distant spread, and lie outside the scope of the classical radical operation. In order to be successful, treatment must be carried out before the onset of distant metastases. Even in clinical stage I distant spread has already taken place in about 20% to 30% of patients, but once the axilla is invaded the incidence is much higher. In either stage,

if the addition of radiotherapy to radical surgery improves the results, it must be because irradiation has destroyed (or confined) cancer cells still remaining within the treated tissue. It can be argued that, in clinical stage I, radical surgery is too radical and that the chance of peripheral but still regional lymphatic spread can be met by full post-operative irradiation.

In stage II radical surgery can deal only with about one-third of cases successfully, and in the remainder the disease is already beyond the reach of the surgeon's knife. Keynes maintained that in these cases simple removal of the tumour, which may mean simple mastectomy, with simple excision of accessible lymph nodes and no disturbance of the axilla by dissection, together with full post-operative irradiation, would achieve the same result as radical mastectomy and irradiation without the morbidity of the larger operation. Indeed, if radical mastectomy exposes the patient to the risk of spread by abnormal channels the results of conservative surgery and irradiation may be better than those of more radical surgery. Surgery and radiotherapy balance each other in the eradication of cancer cells within a similar volume of tissue, and the scope of surgery can be decreased provided the radiotherapy is thorough. Actually the scope of radiotherapy is greater, for it can include the whole skin area from clavicle to costal margin and sternum to back. It can embrace the lymph nodes in the internal mammary region, the neck, the axilla, and the pathways and tissue planes in between. It can exert its full action only if anatomy and physiology have not been too seriously interfered with, and in skilled hands it can do this without risk of immediate morbidity.

Ewing pointed out many years ago that the radical operation was, on the one hand, performed too often on comparatively innocent growths, such as encapsulated adenocarcinoma, and localized duct cancers which may be ablated by simple mastectomy; and, on the other hand, on highly malignant forms of the disease which are invariably fatal. The good result in the first type of case is ascribed falsely to sacrifice of tissue, whilst in the other type of case the extreme limits of tissue removal will not save the patient.

The Present Investigation

The unique nature of the material available in the records of St. Bartholomew's Hospital for 1930 to 1939 inclusive suggested that a retrospective inquiry might be of real value in answering some of the problems of mammary cancer. During this decade a large number of cases were treated, chiefly by Keynes but also by the surgical professorial unit, by a method which was at that time considered highly unorthodox. In view of the continued dispute about the merits of radical and more conservative treatment there seemed to us to be a real advantage in comparing the results of these different methods of treatment during the same period of time, when conditions were more or less uniform. It must be recognized, of course, that certain problems may be answered only by a planned research, such as one in which alternate cases are allocated to different treatment groups. Nevertheless, it would hardly be justifiable to do this unless one had substantial evidence, such as we believe is provided by the present material, that the ultimate results are much the same for different methods of treatment.

Objects and Scope of Inquiry

We set out to analyse the results of treatment of all the new cases of primary carcinoma of the female breast seen at St. Bartholomew's Hospital during the years 1930–9 inclusive, but excluding cases sent on for radiotherapy after operation elsewhere. The main objects of the analysis were: (1) To endeavour to assess the relative merits of radical surgery and conservative surgery, together with radiotherapy in the treatment of cancer of the female breast. (2) To find out what part radiotherapy plays in the treatment, its effect on local recurrence rate, and its effects on survival. (3) To determine the morbidity of treatment, with special reference to oedema of the arm and the possible influence of radiotherapy. (4) To decide whether the radical operation justifies itself in terms of survival and morbidity. (5) Finally, if different methods of treatment have their special indications, to try to find out how the doctor may decide the best method for each particular patient.

From the total number of cases registered in the follow-up department, 182 patients from previous years with recurrent tumours were excluded, as were 102 cases operated on at other hospitals. In addition there were 60 cases for which the records were incomplete, and it was impossible to determine whether or not they should have been included. In all, 1,044 cases were available for analysis.

St. Bartholomew's Hospital, in common with other London teaching hospitals, draws its patients from a wide and indeterminate area. The existence of a large radiotherapy centre has probably been the reason for the greater number of advanced cases than is seen in most series, but otherwise there is no reason to suspect any particular selection. Once referred to the hospital, all malignant cases were registered in the follow-up department.

Follow-up and Method of Inquiry

Of the 1,044 cases all but 30 (2.9%) were followed up, either by frequent examination at the out-patient department or by postal inquiry, until May, 1951, or the time of their death. This has enabled ten-year survival rates to be calculated for the whole series, and fifteen-year rates for those registered during the six years 1930–5.

Apart from registration in the follow-up department no uniform methods of recording were used, and the only material available for study has been the routine clinical notes taken by students, house-surgeons, registrars, and consultant staff. All the records were scrutinized by two of us (I. G. W. and R. S. M.) during a period of five months in 1952, the most important details being transcribed on to special forms from which Hollerith cards were punched.

Clinical Staging.—Many of the cases had been staged at the time of first diagnosis, but as uniform methods had not always been used all were staged afresh from such information on the clinical condition as was available. The method used was a modification of the so-called "Manchester" system.

Stage I.—The tumour is freely mobile on muscle or chest wall. Ulceration or involvement of the skin must be no larger than the primary tumour and directly in continuity with it.

Stage II.—There are now palpable lymph nodes, considered to be metastases, in the axilla of the same side.

Stage III.—The primary growth is larger, and is now fixed to muscle but not to chest wall. Skin involvement can be wide of the primary tumour but is still over the breast. Axillary glands, if infected, must be mobile.

Stage IV.—The growth has extended beyond the breast and immediate regional lymphatic glands. Fixation of axillary glands or fixation of the primary to the chest wall places the tumour in stage IV.

The distribution by clinical stages for the whole series is shown in Table I.

TABLE I

	Clinical Stages				Unstaged	Total
	I	II	III	IV		
No. of cases	339	302	286	106	11	1,044
% ..	32·5	28·9	27·4	10·2	1·1	

General Features of the Series

Age.—The age distribution of the whole series was as follows:

Years:	0–	25–	35–	45–	55–	65–	75–	Not Stated	Total
Number ..	3	37	190	317	298	159	38	2	1,044
% ..	0·3	3·5	18·2	30·4	28·5	15·2	3·6	0·2	

This follows the familiar pattern with nearly 60% of cases falling into the group 45–64. Over the age of 65 there were perhaps fewer cases than appear in most comparable series—for example, 18.9% compared with 29.0% given by Harnett (1948). The proportion of single women was 21%, and this agrees with other published series. There were three cases of lactation carcinoma, and in four cases

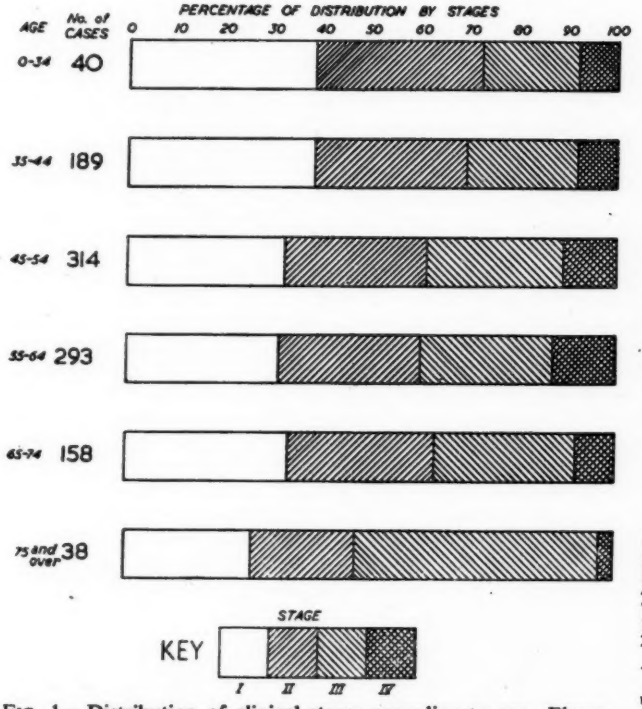

FIG. 1.—Distribution of clinical stages according to age. Eleven cases with stage unknown and one other case with age unknown are excluded.

the disease was diagnosed and treated during pregnancy. Fig. 1 shows the distribution of clinical stages for the different age groups. Of women aged less than 45 about 70% had tumours which were in clinical stages I and II, whereas at all ages from 45 to 75 the corresponding proportion was about 60%. There were only 38 women aged 75 or more, and half of these were in stages I and II.

Site of Tumour.—The site of the tumour in the breast was recorded in all but 26 cases, although the quadrant was not always specified. Fig. 2 shows the percentages occurring in the four quadrants and also of those simply recorded as "upper," "lower," "inner," or "outer." In 8% of cases the tumour was described as central, and 12% filled the whole breast. Exact comparison with other series is made difficult by the absence of precise definitions. For the purposes of later analysis all inner and all outer tumours have been grouped together, other sites being, for this purpose, ignored. Of the 502 outer-half tumours, 37% fall into stage I and 35% into stage II. The corresponding figures for the 182 inner-half tumours are 46% and 29%. Simultaneous bilateral tumours were recorded in eight cases, giving a slightly lower proportion than has been noted by other observers. For the rest of the series the excess of left-sided over right-sided tumours was 11%, a figure that agrees closely with those cited by Nohrman (1949). Among these were 37 (4%) in which the other breast was, either previously or subsequently, the site of a carcinoma; but there is, of course, a possibility of confusion between some of these cases and the true simultaneous tumours.

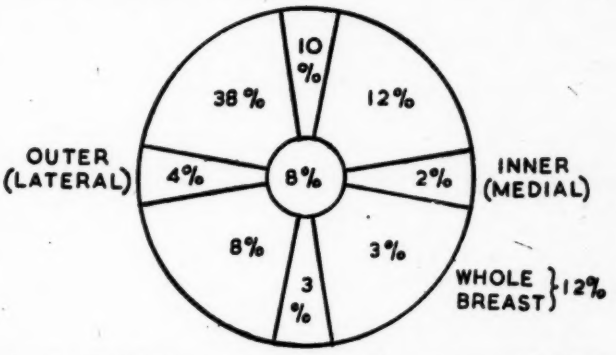

FIG. 2.—Distribution of tumours by site. The narrow sectors indicate the proportions of tumours recorded simply as "upper," "lower," etc. The percentages are calculated from the whole series less the 8 cases with bilateral tumours and the 26 for which no exact site was recorded.

Length of History.—Were it possible to obtain accurate information of the time when the lump in the breast first appeared it might be possible to calculate some sort of index of growth rate, or essential malignancy for each tumour. But, in the nature of things, such information is unobtainable, and all we can give is the length of time for which the patient can remember symptoms. This length of history is naturally correlated with the clinical staging, as is shown in Table II, but not to such an extent that all difference in

TABLE II.—*Clinical Staging and Length of History*

Length of History (To Nearest Month)	No. of Cases	Distribution by Stages			
		I	II	III	IV
1 month	117	40%	41%	13%	6%
2 months	122	40%	34%	18%	7%
3 ,, ...	107	37%	26%	24%	12%
4–6 months	222	39%	28%	25%	8%
7–11 ,, ...	230	23%	29%	33%	15%
1 year–	118	25%	26%	40%	9%
2 years–	93	31%	21%	40%	8%

This table excludes 33 cases with unknown length of history and two other unstaged cases.

staging can be explained in this way. For example, 19% of the 117 patients with only one month's history of symptoms were in stages III or IV by the time that they were seen, whilst of the 93 women who claimed more than two years' history no less than 31% were still in stage I.

Pathological Grading and Staging.—Histological reports were usually available, but it was clear that any attempt to grade the tumours from the reports alone in the manner suggested by Bloom (1950) would not be justified. It was not found practicable to study the original sections. It was, however, recorded whether or not the axillary glands had been invaded, and this will be referred to as the pathological staging. Pathological reports were available in 448 of the 505 cases in which the axilla was dissected, and Table III

TABLE III.—*Clinical Staging and Gland Involvement*

Stage	No. of Cases with Axillary Dissection	No. of Cases with Histological Reports	Percentage Reported as Having Glands not Involved
I	184	164	71%
II	202	180	23%
III	103	93	17%
IV	13	11	—

This table includes all cases subject to radical or modified radical surgery, other than three unstaged cases.

shows the results according to the clinical staging. It will be seen that for stage I the clinical assessment was upheld by the pathology report in 71% of cases, whilst in the remaining 29% the clinician had been unable to detect an involvement which was later proved to be present. In stage II, on the other hand, there were 23% of cases in which the clinician reported gland involvement which the pathologist was unable to confirm. It is perhaps interesting that whereas, as has been shown, there is an appreciable association between length of history and clinical staging, there is no such clear association between length of history and gland involvement. This may be seen from the following analysis. If we take the 428 cases in clinical stages I, II, and III (omitting the few for whom the length of history was not given), the following percentages are the proportions of cases in each stage *with a length of history of six months or more*: Stage I, 43% (161); Stage II, 54% (177); Stage III, 64% (90). If these same cases are now divided according to the histological reports we have: Glands free, 51% (170); involved, 52% (258), the figures in parentheses being the numbers of cases on which the percentages are based.

Methods of Treatment

The methods of treatment used in this series are shown in Table IV; there were three main surgical treatment groups: simple surgery, radical surgery, and modified radical surgery. Each of these three groups is further subdivided into surgery alone, surgery with *x* rays, and surgery with radium. A few of the cases treated initially by simple surgery had more extensive operations at a later date, but the figures in the Table refer only to the primary treatment and not to any subsequent operations or irradiation.

Table IV.—*Methods of Initial Treatment for the Whole Series*

	With *X* Rays	With Radium	Without Irradiation	Total
Simple surgery	70	101	58	229
Radical ,, ...	147	7	184	338
Modified radical surgery ..	51	70	46	167
Without surgery	114	149	47*	310
Total ..	382	327†	335	1,044

* Untreated cases. † Includes two cases treated with radium and *x* rays.

Simple Surgery.—This group comprises 229 cases, 58 being treated by operation alone, 70 by simple surgery and *x* rays, and 101 by simple surgery and radium. The operation was confined to simple excision of the tumour in 127 cases and the remaining 102 had a simple mastectomy. Two-thirds of the cases were under the care of Keynes or the surgical professorial unit. In the earlier years Keynes tended to do local excision of the tumour, but the occasional occurrence of carcinoma elsewhere in the breast led to his adoption of simple mastectomy in most cases. Ten of the 127 simple excision cases had more radical surgical treatment at a later date; these include one modified radical operation four months after local excision and *x* rays, and three modified radical and six radical mastectomies from one to thirteen years after simple excision and radium treatment. Even after excluding these ten secondary operations for persistent or recurrent disease it should be noted that more than half the cases in the simple surgery group were treated by the minimum of surgery.

Radical Surgery.—Radical mastectomy with or without irradiation was performed as the initial method of treatment in 338 cases—that is, in 32% of the whole series. Fig. 3 shows that the proportion remained fairly steady throughout the whole 10 years. A study of the case records of those treated by radical surgery and knowledge of the practice of individual surgeons indicate such variations in surgical technique as one would expect among different operators. (The operations were done by 12 members of the consultant staff and their chief assistants and also by the professorial staff.)

Modified Radical Surgery.—This is the descriptive title used for simple mastectomy and axillary clearance without removal of the pectoral muscles. A special group of 70 cases treated by modified radical mastectomy by the surgical professorial unit formed a research series which has been reported by Professor Sir James Paterson Ross (1938). This was an almost consecutive series of cases in which mastectomy followed radium treatment after an interval of three months in 50 cases and of six months in the remainder, and the operation was done with the object of providing material evidence of the effects of irradiation rather than as a method of treatment *per se*. This series is too small to permit any definite conclusions about the value of this form of combined treatment. The reasons for performing this operation were not often given in the records of the remaining cases, but sometimes it was done in elderly or less fit patients in whom the radical operation was considered too severe. It is an operation which provides fuller pathological data than simple mastectomy, but it is doubtful whether there is any direct therapeutic advantage.

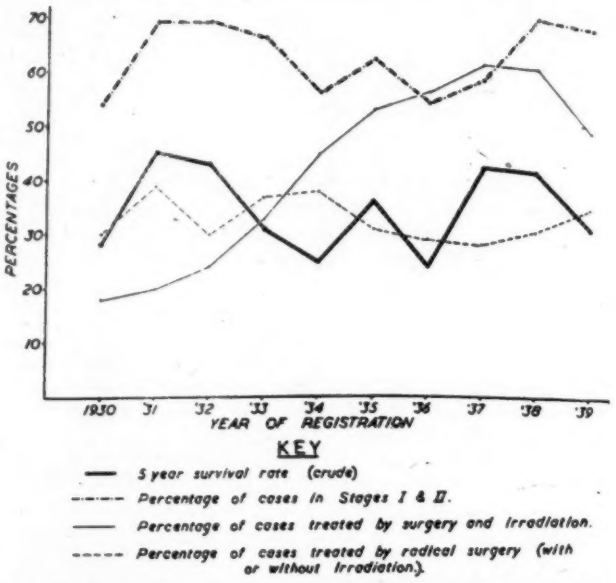

Fig. 3.—Crude five-year survival rates for cases registered each year, compared with percentage of cases in clinical stages I and II.

Irradiation

Radium treatment alone was used initially in 149 cases, but subsequent simple mastectomy was done in 13; radical mastectomy in 7, and modified radical mastectomy in 5. About a quarter of those treated by radium alone were in stage I, but as the diagnosis was not always confirmed by biopsy one must be cautious in assessing the results for radium treatment alone.

Simple surgery and radium were combined in the treatment of almost half the cases dealt with by limited surgery. The technique of radium therapy was that described by Keynes (1929, 1932), and it will not be further discussed here. Radium was combined with radical surgery in seven cases, all of which were treated in the earlier part of the decade under review, when *x*-ray methods were still being developed.

X-ray treatment alone was reserved chiefly for advanced cases, and only 6% of this group was in stage I. Rarely was the diagnosis confirmed by biopsy. *X* rays and simple surgery were used less often than the combination of radium and simple surgery, although, in the light of experience, the former method gradually became more popular.

Radical surgery and *x*-ray therapy, generally post-operative, was used in almost half the radical mastectomy cases. Dosage was in the region of 4,000 r minimum, during a period of four weeks, directed to the chest wall, axilla, and

supraclavicular regions. In 15 cases the treatment was given pre-operatively, the usual reasons being either a large growth or advanced disease. With so many different surgeons at work and in the absence of any well-defined criteria for *x*-ray treatment, it is not possible to give any clear indication of how cases were selected for irradiation. Towards the end of the period under review some surgeons were tending to refer all patients for post-operative radiotherapy, but in general those irradiated included a higher proportion of less favourable cases. Fig. 3 shows how the combination of surgery and irradiation became increasingly popular, the proportion thus treated being 18% in 1930 and 60% in 1938, although it fell to 48% in 1939.

Untreated Cases.—Of the 47 untreated cases 14 were in stage III and the remainder in stage IV. Only two patients in the whole series refused all treatment.

Assessment of the Results of Treatment

Discussion has raged for many years regarding what is the most appropriate way to measure the results of treatment of cancer of the breast. A whole battery of statistical and actuarial techniques has been introduced, but in spite of this there is still no general agreement on the fundamental question of how long, if at all, life is prolonged by any form of treatment. Greenwood (a pioneer in this field) asserted (1926): "The expectation of life of a woman with untreated cancer of the breast is 3.25 years, the expectation of life of a woman operated on under 'average' conditions is 5.74 years and of a woman operated on under the best conditions is 12.93 years." His analysis may seem somewhat naive to our present way of thinking. At the other extreme we have Park and Lees (1951): "It has not been proved that the survival rate of cancer of the breast using the five-year survival rate as an index is affected by treatment at all."

This is not the place to discuss the statistical problems involved, for we are concerned in this paper only with the *relative* results of different forms of treatment: in choosing the statistical method most appropriate to our purpose our chief requirements are: (1) that the method chosen should be simple to use and understand; (2) that it should be reasonably sensitive; and (3) that it should allow for any gross bias introduced by selection between the groups.

The method we have adopted is to express our results in terms of five- and ten-year survival rates calculated separately for the different stages and adjusted by Berkson's (1942) method to allow for variations in the age distribution. Fifteen-year survival rates have also been calculated for the 600 cases registered from 1930 to 1935.

Recent observers are agreed that staging, whether assessed clinically or pathologically, is the most important single factor in prognosis. This is clearly demonstrated by Fig. 3, in which are plotted: (i) the crude five-year survival rates for all cases registered in each of the years 1930–9, and (ii) the percentages of stages I and II cases among each year's registrations. It will be seen that the two graphs have an almost identical pattern. (The other graphs plotted on this diagram have been referred to already.) The survival rates for the different stages are so different that little or no useful information can be gained from a study of figures in which no distinction is made between them. Even methods of standardization, such as that recommended by Park and Lees (1951), are open to serious disadvantages.

In using time of survival as an index of the success of treatment it is clear that no satisfactory comparison can be made without taking age into consideration. For example, in 1931 the expectation of life of a woman of 40 was about 32 years compared with only 10 years for one of 70. This difficulty is particularly important in a disease like carcinoma of the breast, where there is a relatively high survival rate even at 10 years. One solution of the problem is to confine analysis to those actually dying of cancer; if all patients lived and died under the care of the hospital where they were first treated this might be the ideal solution, but in practice it leads to difficulties. We have preferred, therefore, to use the method first proposed by Berkson and now adopted by W.H.O. (1950)* for the purposes of international comparisons.

For any group of people of known ages it is possible to calculate the number who may be expected to be alive after a given number of years, assuming that they are subject to the normal mortality experience of the whole country as expressed on the Registrar-General's Life Tables. We can therefore define the crude and adjusted rates as follows:

$$\text{Crude rate} = \frac{\text{No. alive and traced after } n \text{ years}}{\text{No. originally registered}} \times 100$$

$$\text{Adjusted rate}^* = \frac{\text{No. alive and traced after } n \text{ years}}{\text{Expected No. alive after } n \text{ years}} \times 100$$

It will be seen that no allowance is made for the possible survival of any of the untraced cases.

The chief advantage of this method is that it is entirely objective, but one disadvantage is that it is effective only for groups of such a size as to even out chance fluctuations in the number of deaths due to intercurrent disease. The effect of the adjustment is illustrated by the following figures, showing the crude and adjusted rates for two age groups:

		10-year Survival Rates	
		Crude	Adjusted
Stage I cases	Ages 0–44	45%	48%
	,, 65–	22%	49%

When comparing treatment groups there was not as much difference as this between the crude and adjusted rates, for there were no very great differences in the age distributions of the groups under consideration. Nevertheless the adjustment is certainly worth making when ten- or fifteen-year rates are being used.

Another problem that has to be solved is that of defining the groups for which survival rates shall be calculated. There are so many factors, such as age, stage, and site, as well as variations in surgical and non-surgical treatment, that it would be impossible from a series of the size available to a single hospital to split up the figures in such a way as to enable the effect of all these factors to be sorted out. In order to get any results at all a fairly drastic grouping has to be accepted—the more so since, as has been said, it has been felt necessary to give all results separately for the four clinical stages. But to ensure that no important effect has been masked by such grouping, we have in most instances examined the figures in greater detail than can be shown here.

In the following analysis no mention is made of the statistical significance of the results. In a retrospective survey of this kind formal tests of significance are often most misleading. Little is known of what selective factors may have been at work, and the very methods of grouping introduce a highly subjective element into the calculations; it is often possible to change a "significant" into a "not significant" result merely by making an arbitrary change in the classification. All we shall do is to present the survival rates we have calculated and draw such tentative conclusions from them as we feel able.

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* The formula given by the W.H.O. report is as follows:

$$\text{Corrected survival rate} = \frac{1}{p} \times (\text{crude survival rate})$$

where p is the probability of not dying within a comparable period from any cause other than cancer of the site in question, in a population having the same age distribution as the patients comprising the group. The report points out that for most sites p does not differ appreciably from the probability of not dying from any cause, and although the female breast might be regarded as one of the sites where the distinction *should* be drawn, we have not felt it necessary when using the adjustment only for internal comparisons. Our definition is equivalent to the W.H.O. formula, but defining p as the probability of not dying from any cause.

The W.H.O. report does not recommend a method of calculating p, and there is some variation of practice in the matter. To calculate the expected number of survivors we have used the values for women of ${}_5p_x$, ${}_{10}p_x$, and ${}_{15}p_x$ derived from English Life Table No. 10 (1930–2) (and kindly supplied by the General Register Office). For our purposes it has been sufficiently accurate to use ten-year age groups for the calculations.

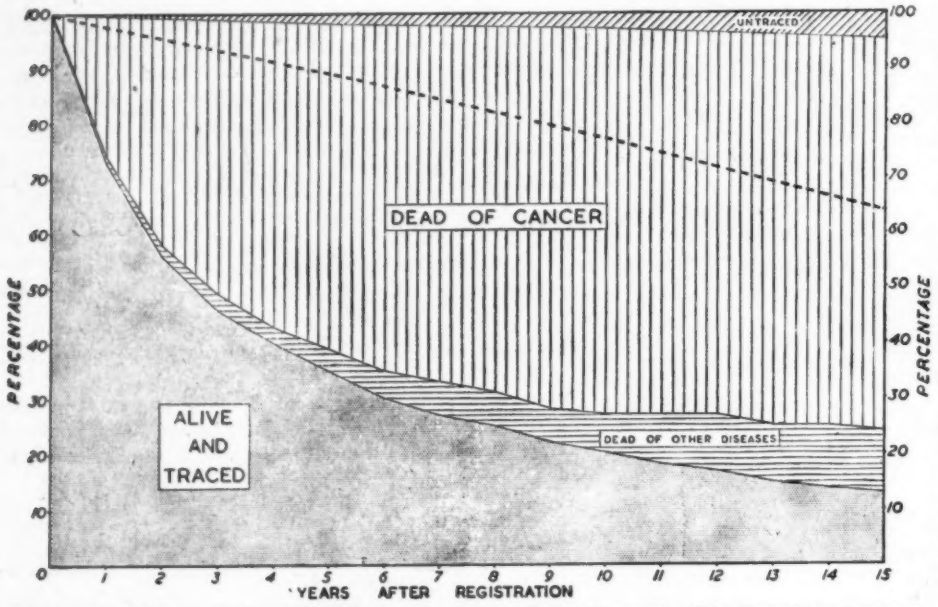

FIG. 4.—Percentages dead and alive based on whole series (1–15 years). (The dotted line indicates the expected survival of a normal group with similar age distribution based on Life Table for 1931.)

Although it is not our object to discuss the overall results of the series, it may be of interest to give them in the form of Fig. 4; this shows the crude survival rates for the whole series (including untreated cases) from one to ten years and for the 600 cases registered between 1930 and 1935 from 10 to 15 years. The numbers recorded as dying of recurrent disease and those untraced are also shown.

Results of Treatment

In presenting results we have compared the survival rates for the different types of surgical treatment—that is, simple, radical, and modified radical surgery—and also those for surgery alone and surgery with irradiation. The number of cases in each of the various subgroups shown in Table IV is generally too small for any comparison of the results obtained, with the possible exception of radical mastectomy. In Fig. 5 the results are shown for five main treatment groups, the various subgroups being ignored. The simple, radical, and modified radical surgery groups include all cases treated by these methods regardless of whether irradiation was also given. The last two groups—surgery alone and surgery with irradiation—include all surgical cases irrespective of the type of operation done. Full details of the various subgroups are shown in Table V to supplement the information given in Fig. 5.

Simple Surgery and Radical Surgery.—Fig. 5 shows that at the five-year follow-up the adjusted survival rates in stage I are slightly in favour of simple surgery, but that this trend is reversed at ten years. Modified radical surgery shows a lower five-year and a higher ten-year survival rate, but there are only 37 cases in this group. In stage II cases the survival rates are almost identical for the three types of surgery.

In assessing these results it should be remembered that the simple surgery group includes 127 cases treated by simple excision of the tumour. Only 10 of these subsequently had a more extensive operation, and the other 117 cases were therefore treated by an operation which most surgeons would regard as quite inadequate. The fifteen-year adjusted survival rates (calculated from the 600 cases registered between 1930 and 1935 inclusive) were 42% for simple surgery, 42% for radical surgery, and 37% for modified radical surgery, the crude survival rates being 28%, 27%, and 26%. We must conclude from these figures that the results for simple surgery are as good as those for radical surgery.

Surgery Alone and Surgery with Irradiation.—Radiotherapeutic technique was developing during the decade in question, and it may be that the selection of cases was not

TABLE V.—*Adjusted and Crude Survival Rates for Stages I–III According to Method of Treatment*

	All Cases Stages I–III	Stage I			Stage II			Stage III		
		Total Cases	Survival Rates Adjusted and Crude (%)		Total Cases	Survival Rates Adjusted and Crude (%)		Total Cases	Survival Rates Adjusted and Crude (%)	
			5-year	10-year		5-year	10-year		5-year	10-year
All treated cases	913	339	72 (65)	51 (40)	302	39 (35)	26 (20)	272	12 (11)	4 (3)
Simple surgery:	216	110	76 (69)	47 (37)	45	41 (36)	31 (22)	61	15 (13)	6 (5)
Without irradiation	55	30	86 (77)	43 (33)	7	—	—	18	—	—
With *x* rays	63	20	—	—	9	—	—	34	10 (9)	4 (3)
„ radium	98	60	73 (67)	49 (40)	29	39 (35)	27 (21)	9	—	—
Radical surgery:	329	147	72 (65)	52 (41)	122	41 (38)	26 (22)	60	9 (8)	4 (3)
Without irradiation	180	88	71 (62)	50 (38)	63	46 (43)	25 (21)	29	11 (10)	4 (3)
With *x* rays or radium	149	59	73 (68)	55 (46)	59	34 (32)	28 (24)	31	7 (6)	4 (3)
Modified radical surgery:	160	37	58 (54)	55 (46)	80	42 (38)	25 (19)	43	20 (19)	8 (7)
Without irradiation	45	13	—	—	26	31 (27)	16 (12)	6	—	—
With *x* rays	48	3	—	—	24	—	—	21	—	—
„ radium	67	21	—	—	30	44 (40)	34 (27)	16	—	—
All surgery without irradiation	280	131	73 (65)	48 (37)	96	43 (39)	24 (19)	53	20 (17)	8 (6)
„ „ with „	425	163	71 (65)	53 (43)	151	40 (36)	28 (23)	111	12 (11)	5 (5)
Irradiation alone:	208	45	75 (64)	50 (36)	55	31 (27)	22 (16)	108	9 (7)	1 (1)
X rays	71	7	—	—	6	—	—	58	0 (0)	0 (0)
Radium	137	38	75 (66)	56 (42)	49	30 (27)	19 (14)	50	19 (16)	3 (2)

(*a*) The following cases are omitted from this table: 106 cases in Stage IV, only one of whom survived 5 years; 14 untreated cases in Stage III, none of whom survived 5 years; 11 unstaged cases.
(*b*) Survival rates for subgroups containing fewer than 25 cases are not shown.
(*c*) The crude survival rates are shown in parentheses.

such as to allow the benefits of radiotherapy to be clearly demonstrated. Fig. 5 shows that the five-year survival rates in stages I and II were practically the same for all surgery alone and all surgery with irradiation. The ten-year survival rates were, however, slightly higher for surgery with irradiation in both stages. Fuller details of the subgroups are given in Table V, where it will be seen that radical mastectomy with irradiation gave slightly better survival rates than radical surgery alone in stage I at five- and ten-year follow-up. The results were also better at ten years in stage II. However, in both cases the numbers were small, and it is impossible to draw firm conclusions.

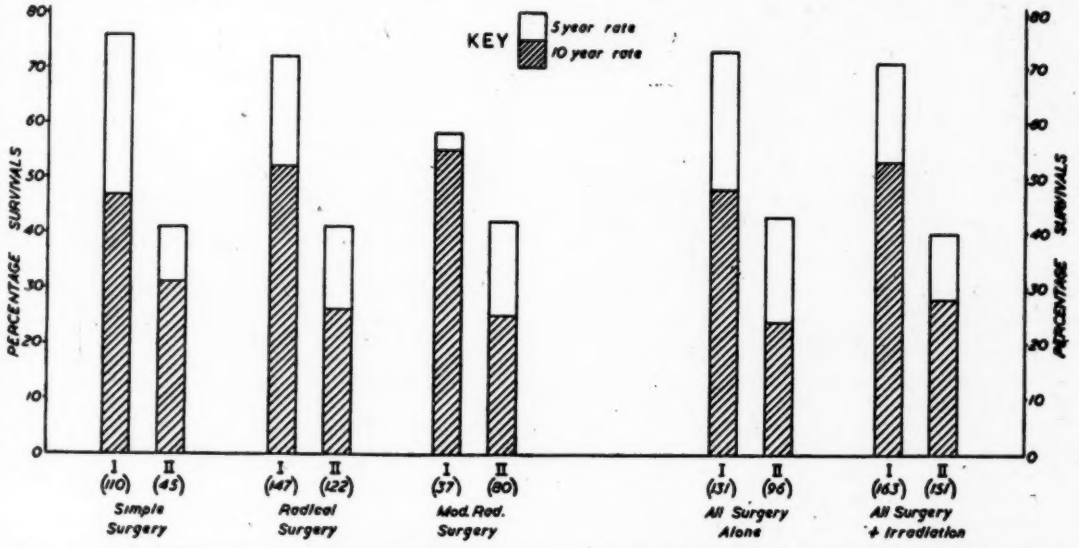

FIG. 5.—Adjusted five-year and 10-year survival rates for surgical cases (stages I and II only). The figures in parentheses are the numbers of cases from which the survival rates are calculated.

Value of Clinical and Pathological Staging

It is commonly assumed that pathological staging is superior to clinical staging in the assessment of prognosis, but it would be better to say that the methods are complementary. In those cases in which the axilla is not dissected the staging must necessarily be clinical, and even where the axilla is dissected the pathological examination of the axillary glands is, as Handley (1952) has shown, by no means the last word. The margin of error in clinical staging has already been referred to; but, despite this, there seems reason to believe that clinical assessment of the axilla may offer a more accurate clue to prognosis than might be expected. Table VI shows the five- and ten-year survival rates for 447 cases, treated by radical or modified radical mastectomy, in which a pathological report on the axillary glands was available. The cases in clinical stages I and II are subdivided into those with glands free and those with glands involved. The second and third columns of figures in this table represent, therefore, those cases in which the clinician was wrong in his assessment of the axilla.

TABLE VI.—*Gland Involvement: Five- and Ten-year Adjusted Survival Rates for Cases in Stages I–III after Radical or Modified Radical Surgery.*

	Stage I		Stage II		Stage III
	Glands Free	Glands Involved	Glands Free	Glands Involved	All Cases
No. of cases	117	47	42	138	103
5-year survival rate	78%	52%	51%	37%	14%
10- ,, ,, ,,	67%	25%	29%	22%	5%

There are not enough cases in Stage III with glands free to enable separate figures to be given (see Table III), but overall rates are included for purposes of comparison.

The lower five-year and ten-year survival rate in stage I with glands involved as compared with stage I cases with glands free is readily understandable. It is, however, less easy to comprehend why stage II with glands free should show the same survival rate as stage I with glands involved. This might be regarded as just a strange anomaly in our figures, but a similar state of affairs is indicated in a table of Smithers (1952), on which no comment is offered in the text.

The practical importance of this finding would seem to be that, in those cases in which the clinician believes the axillary glands to be involved, the prognosis may be much the same, regardless of whether the diagnosis is confirmed pathologically. The high incidence of reactive hyperplasia in the axillary glands of breast carcinoma cases is, of course, well recognized by pathologists. The cause of the reactive hyperplasia which produces the enlarged but cancer-free glands is not known, but Professor Hadfield (1952, personal communication) believes that it may be related to the microscopic foci of necrosis throughout the tumour. Whatever the explanation of this interesting finding may be it does seem to be a matter worthy of fuller attention and investigation, for its relationship to a more serious prognosis is not explicable in terms of orthodox pathology.

Apropos of clinical staging, it is perhaps important to recognize that a clinician is more likely to detect a just palpable axillary gland and to examine the patient more carefully if the primary tumour is a large one. It is likely that this factor—that is, the size of the tumour—explains some of the difference in prognosis in these cases, but it will not adequately explain the similar prognosis for stage I cases with glands involved and stage II cases with glands free.

Site of Tumour and Prognosis

Several published reports (Perry, 1925; Truscott, 1947; Smithers, 1952) have recorded lower, but not significantly lower, five-year survival rates for growths in the medial half of the breast.

For our series, as shown in Table VII, the five-, ten-, and fifteen-year survival rates in stage I were much the same for tumours in medial and lateral halves of the breast. In stage II cases, however, the survival rate was slightly lower for tumours in the medial half of the breast; but this is only what might be expected, since a medially situated tumour with axillary glands palpable is likely to be at a

TABLE VII.—*Lateral and Medial Tumours: Five-, Ten-, and Fifteen-year Adjusted Survival Rates for Surgical Cases in Stages I and II.*

	Stage I		Stage II	
	Lateral	Medial	Lateral	Medial
Whole series:				
No. of cases	159	71	136	41
5-year survival rate ..	73%	70%	47%	38%
10- ,, ,, ..	52%	53%	29%	25%
1930–5 series:				
No. of cases	94	39	82	19
15-year survival rate ..	42%	43%	28%	(15%)

more advanced stage of its development than a laterally situated tumour with palpable glands. Handley (1952) has shown that the internal mammary lymph nodes are invaded in 60% of cases with medial tumours, and in only 19% with lateral tumours, and on this evidence one would anticipate a worse prognosis for those patients with medially situated tumours.

Despite the greater ease with which the medial growth may reach the mediastinum our own figures would suggest that, in the absence of palpable axillary glands, prognosis is no worse for a tumour in the medial half than for one in the lateral half, and this is a point of some importance to the clinician faced with the daily problems of breast carcinoma.

Length of History and Prognosis

It may be asked whether we can demonstrate from our figures that delay in seeking advice worsens the prognosis. This is a most difficult question and one that obviously cannot be answered directly. In so far as longer history is associated, as we have shown, with tumours of a more advanced stage, which undoubtedly have a worse prognosis, then the answer is clear. A more detailed analysis, for which there is not space here, seems to show that for tumours of a given stage (as assessed both clinically and pathologically) the ones with a long history do no worse or better than those with a short history.

Mortality and Morbidity of Treatment

Mortality.—Four out of 338 patients died after radical mastectomy, a mortality of 1.2%. Three of these four deaths were due to massive pulmonary embolism. Of the 167 patients undergoing modified radical mastectomy only one died. One died after simple excision of the tumour and three after insertion of radium needles. Two of these last five deaths were due to massive pulmonary embolism, and two were due to pulmonary infarction following repeated embolism. Of the nine deaths in the entire series seven were therefore due to thrombo-embolic complications, with five deaths due to massive embolism.

Morbidity.—In the course of the analysis the question of treatment morbidity was investigated, special attention being directed to the problem of the swollen arm, limitation of shoulder movement, radionecrosis, and brachial plexus palsy. The first of these complications was the one in which we were most interested, particularly in trying to determine what part extensive surgery and radiotherapy play in its production. The true incidence of some complications may well have been higher than the notes reveal, and the severity of such a complication as oedema cannot be accurately estimated. It is possible that some of the original observers may have been more punctilious in recording the complications after certain methods of treatment. Notwithstanding all these factors, we believe the information collected to be of value.

Oedema of the Arm.—Surgeons are shy to admit responsibility for this complication and the radiotherapist is often blamed. Some surgeons indeed claim that they rarely see this complication after surgery alone. In Table VIII is shown the incidence of oedema of the arm following different methods of treatment. The three different types of surgical procedure are listed irrespective of whether irradiation was also given, the proportion of irradiated cases being not greatly different in each group. There is no doubt about the significance of the lower incidence following simple surgery. In comparing the results for all methods of surgery alone with all methods plus irradiation the incidence of oedema of the arm is 12% in each group. A further factor of some importance in causing oedema of the arm is sepsis at the operation site; this was emphasized by Halsted (1921) many years ago. Table VIII also shows how the incidence of oedema of the arm was related to healing of the wound after radical or modified radical mastectomy. Oedema was twice as frequent in those cases developing haematoma, sepsis, or slough as those with uncomplicated healing.

TABLE VIII.—*Incidence of Post-operative Oedema*

	Total No. of Cases	Cases of Oedema	
		No.	%
All surgery	734	87	12
Simple surgery*	229	11	5
Radical surgery*	338	48	14
Modified radical surgery*	167	28	17
Surgery with irradiation	446	52	12
,, without ,,	288	35	12
Radical and modified radical surgery:*			
With primary healing	278	35	13
,, sepsis or sloughs	84	20	24
,, haematoma	65	13	20

* With or without irradiation.

There were 78 cases with no record of the healing of the radical wound

Recurrences in the Treated Area

Among the whole series there were 297 (28%) for whom local recurrences were recorded; of these, 53% were in the first year, 74% within the first two years, and 91% within the first five years.

In analysing the incidence of local recurrences there are considerable difficulties. First there is the question of definition. We have not always found it possible to distinguish, from the records, between a tumour persisting after conservative treatment and a true local recurrence. In a retrospective inquiry there is clearly no way out of this difficulty. Then there is the problem of how to express the figures themselves. Smithers *et al.* (1952) recommend the use of the "recurrence-free rate," which is the percentage at any time who are alive and have suffered no local recurrence. This method does not, however, take into account the time of onset of the local recurrence, making no distinction, for instance, between two patients, both surviving for five years, one of whom has a recurrence in the first and the other in the fifth year.

Our somewhat tentative solution to this problem has been to devise a ten-year local recurrence index, which is defined as follows:

$$\text{Local recurrence index} = \left(1 - \frac{\text{Total completed recurrence-free years}}{\text{Total completed years of survival}}\right) \times 100$$

In calculating both these totals only the first ten years after treatment are taken into account; recurrence-free years are those between treatment and the onset of the first recorded local recurrence, irrespective of whether it was cured. An advantage of the index is that it is largely independent of the actual survival rate, and it is therefore possible to compare groups in which the proportions of the clinical stages are not the same.

Table IX shows the number of cases of local recurrence recorded after each form of treatment and also the local recurrence index. The high figures for *x*-ray and radium treatment are no doubt partly due to the confusion of persisting tumours with local recurrences. So far as the other methods are concerned, it will be seen that the lowest

TABLE IX.—*Local Recurrences in Stages I–III*

		No. of Cases	No. with Local Recurrence Within Ten Years	Ten-year Local Recurrence Index (%)
Simple surgery	Alone	55	20	16
	With *x* rays	63	27	14
	,, radium	98	29	13
Radical ,,	Alone	180	37	6
	With *x* rays	143	30	8
Modified radical surgery	Alone	45	15	15
	With *x* rays	48	10	9
	,, radium	67	14	15
X rays alone		71	19	24
Radium alone		137	64	31

This table excludes the untreated cases and the 6 cases treated with radical surgery and radium.

indices are for radical surgery, and that the addition of radiotherapy seems to have no appreciable effect.

All this is, however, somewhat speculative, and we should be unwilling to base any firm conclusions on these figures. The method is presented partly with the object of stimulating comment and criticism, for the subject is one that seems to have been neglected. Not only should consideration be given to the theoretical aspects of this problem, but, more important, a large series should be followed up with the specific aim of discovering the usual pattern of local recurrences and their effect on survival. We believe that, while the treatment of local recurrences may rid the patient of an obvious focus of disease, it may not in most cases be a means of prolonging life.

Discussion

The present series represents a group of cases treated long enough ago for us to be able to assess the long-term results. The fact that radiotherapy technique was neither so highly developed nor so widely accepted as at the present time suggests that the results obtained then should be bettered to-day.

The most impressive finding in this series is the remarkable similarity in survival rates following different methods of treatment. All the main treatment methods analysed seem to have been equally effective in stages I and II. It must, however, be frankly recognized that all methods of treatment may have been equally ineffective in prolonging life. While properly applied treatment has great palliative value it is important to ask to what extent treatment has affected survival. The only truly curable cases are those in which there is no distant spread at the time of the initial treatment, and complete eradication of the disease is probably not often achieved.

The advocacy of conservative surgery and radical radiotherapy by McWhirter (1948), although it has not yet met with universal approval, has encouraged many surgeons to take a much more critical view of their results. Some have been slow to appreciate the fact that the best results of radical surgery are due to selection of the most favourable cases, and it has not been easy for such people to accept a less radical doctrine. Great credit is due to McWhirter and the surgeons of the Edinburgh school, who have given the more reluctant amongst us the opportunity of watching a bold experiment. Even greater credit is, however, due to Geoffrey Keynes, who had the courage to adhere to a method of treatment which, 20 years ago, was regarded by most surgeons as totally inadequate.

The advocates of radical mastectomy, while conceding the point that a grossly diseased axilla is not benefited by dissection, believe that a real advantage accrues in those patients with minimal axillary gland involvement. But is this really so? Is it not possible that axillary and internal mammary lymph node involvement are of equally serious significance, and that, despite the seeming accessibility of the former, in neither instance is the disease truly curable? If this is in fact true, it may be the main reason why the results of simple surgery compare so favourably with those of the more radical procedure. The supporters of radical mastectomy may have attached too much importance to the removal of the axillary glands. Does their accessibility justify the assumption that their removal is advantageous to the patient? The possible advantage of axillary dissection in those patients with low axillary gland involvement may be offset by the frequent occurrence of extensive axillary disease which even the most experienced surgeon may not detect before operation.

The definite morbidity of radical mastectomy, and the fact that it seems to offer no greater survival rate, suggest that the time has come to ask whether this operation has more than a limited place in the surgeon's armamentarium. The only possible advantage we have adduced in favour of the radical operation is the lower local recurrence index when compared with simple surgery. However, many of the local recurrences in the simple surgery group occurred in those cases treated by simple excision of the tumour; and modern radiotherapy and simple mastectomy might show up more favourably in this respect. It might be expected that a method of treatment which gives a low local recurrence index would also show a better overall survival rate. It is, however, possible that local recurrence *per se* is an infrequent source of distant metastases and that the appearance of the latter has been determined quite independently of the former. No firm decision can be given on this matter, and the subject is worthy of further investigation.

In the absence of facilities for modern radiotherapy it may be that the radical operation, confined to the most favourable cases, offers the best chance of cure and of preventing local recurrence.

Although we doubt the value of the radical mastectomy operation it is noteworthy that some surgeons, and more especially in the United States of America, have advocated even more radical operations involving removal of costal cartilages and excision of the anterior mediastinal glands. In our opinion such operations are unjustifiable and may in many cases be positively harmful to the patient. Some of the recent interest in this over-radical surgery has been due to the too literal interpretation of Handley's work by the enthusiastic surgeon. The anterior mediastinal glands are readily accessible to irradiation, and it would seem more reasonable to treat them in this way rather than to remove them by block dissection.

So far as the results of radiotherapy are concerned we are reluctant to draw conclusions from our own material. Owing to variations in technique during the decade in question, it has not been easy to show that radiotherapy increased the survival rate or lowered the incidence of local recurrence, although there are some indications that this was so. A carefully planned research would be necessary to elucidate this matter.

To determine a treatment policy suited to each individual type of case, although perhaps an ideal, is a difficult problem. Points about the case which are readily recognized after operation, and detailed examination of the pathological specimens, are not easily appreciated beforehand. To practise several variations in treatment is not always so easy or so logical as it seems. There are so many unknown factors to be taken into consideration that in these circumstances, and in the present state of our knowledge, a great deal can be said for simple mastectomy and radical irradiation in the majority of cases. Simple excision of the tumour and radiotherapy is a reasonable alternative in many elderly patients, and in some of those with small tumours. The great importance of the most careful clinical examination, supplemented by the necessary diagnostic *x*-ray investigation, should be continually emphasized as the only way to avoid unnecessary treatment for the patient with distant disease.

Summary

The purpose of the paper is to present an analysis of the results obtained in 1,044 cases of carcinoma of the female breast first seen at St. Bartholomew's Hospital during 1930–9.

Follow-up of all but 30 untraced patients was complete until May, 1951, enabling 10-year survival rates to be calculated for the whole series and 15-year rates for cases registered in 1930–5.

The distribution by clinical stages was as follows: I, 32.5%; II, 28.9%; III, 27.4%; IV, 10.2%; unstaged, 1.1%. Distribution by age and site of tumour was similar to that given in other published series.

Differences in clinical staging are not explicable only in terms of delay in seeking advice. Of cases with more than two years' history 31% were still in stage I, whilst 19% of those with a history of one month or less were in stages III and IV.

Pathological investigation of cases with axillary dissection revealed that the clinical assessment of the glands was wrong in 29% of stage I cases and 23% of stage II

cases. There was no clear association between length of history and gland involvement.

The various methods of treatment are discussed. Simple surgery was undertaken in 229 cases, more than half of which were treated by simple excision of the tumour. Radical mastectomy was done in 338 cases, and the modified radical operation in 167. Radium treatment without surgery was used in 149 cases, and *x* rays alone in 114. Forty-seven cases were not treated. Of the cases treated surgically, about two-thirds were also given irradiation. This type of treatment became more frequent towards the end of the period, and at the same time *x* rays tended to replace radium, particularly in combination with simple surgery.

Five- and ten-year survival rates, adjusted for variations in age distribution, are calculated for different clinical stages and treatment groups. The adjusted rates for all treated cases in stage I were as follows: five-year, 72%; ten-year, 51%. The corresponding figures for stage II were: 39% and 26%. The rates for the individual treatment groups showed no appreciable departure from these figures despite the fact that simple surgery consisted merely of local excision in more than half the cases; nor did the addition of irradiation affect the rates, although it is possible that selection of cases may have concealed some of the benefits of radiotherapy.

Attention is drawn to the lower survival rates in the cases assessed clinically to be in stage II but with axillary glands pathologically free, compared with stage I cases with glands involved.

The mortality of radical mastectomy was 1.2%. Oedema of the arm occurred after radical surgery in 14% of cases, compared with 5% after simple surgery, and was almost twice as frequent when the radical wound gave rise to complications as in those with primary healing.

There seemed to be fewer local recurrences following radical surgery than other types of surgery, but the addition of radiotherapy appeared to make no difference in this respect.

It was concluded from a general discussion that where efficient radiotherapy is available radical mastectomy should be abandoned in favour of conservative surgery.

We wish to express our gratitude to Mr. Reginald Vick, Mr. Geoffrey Keynes, Sir James Paterson Ross, and the other members of the staff of St. Bartholomew's Hospital who allowed us to undertake a study of patients who were under their care. Our thanks are also due to Dr. Christine Abernethy and Mrs. Perkins, who have both contributed to the completeness of the follow-up records, and to the staffs of the follow-up and statistics departments, on whom fell much of the routine work.

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TREATMENT BY OESTROGENS OF PULMONARY METASTASES FROM BREAST CANCER

BY

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In a previous paper, based on treatment of 152 cases of advanced breast carcinoma by oestrogens, one of us has commented on the encouraging results in cases of pulmonary metastasis. It was recorded that out of 25 cases of pleural or lung metastases treated by oestrogens there were nine survivals for longer than 12 months (Stoll, 1950). In the majority of these cases, also, there was radiological evidence of regression of these metastases. This achievement is remarkable in view of the average survival of only about three months in similar untreated cases. The series has now been expanded to 61 cases treated at the London Hospital Radiotherapy Department between 1943 and 1950. In addition, the results are compared with a series of 66 cases of pleural and lung metastases seen during the same period but not treated by oestrogens. All cases were supervised by one or other of us.

The background of the cases must first be examined. The number of cases of breast carcinoma recorded with pleural or lung metastases from 1943 to 1950 was 159, and the number of cases with pleural or lung metastases, verified radiographically, was 127. Of these latter cases, oestrogens were prescribed in 61 and not prescribed in 66. The selection of cases for hormone administration was statistically random but not controlled. When the cases came to be analysed it was found that the proportion of cases of a younger age group was considerably higher in the untreated than in the treated group (Table VI). That this distribution did not influence the results is seen in the same table, where for each group the age of the patient was found to exert no influence on the length of survival. This fact is further commented on later.

Length of Survival after Oestrogen Treatment of Pulmonary Metastases

Table I.—*Months of Survival in Treated and Untreated Cases*

Months Survival	Cases of Pleural Metastasis		Cases of Lung Metastasis		Total	
	T.	U.	T.	U.	Treated	Untreated
1–3	17	31	6	12	23 (5 still alive)	43 (all dead)
4–6	9	10	3	4	12 (4 „ „)	14 („ „)
7–11	5	3	2	1	7 (2 „ „)	4 („ „)
12+	9	4	10	1	19 (9 „ „)	5 („ „)
Total ..	40	48	21	18	61	66

Table II.—*Comparative Percentage Survival in Treated and Untreated Cases*

	Treated Group	Untreated Group
Died within 3 months ..	29·5%	65%
„ 4–11 months	21·5%	27·5%
Survival over 12 months ..	31%	7·5%
Still alive, 1–11 months ..	18%	—
	100%	100%

The survivals in months following the prescription of oestrogens are shown in Table I. In all except eight cases the treatment was begun within one month of the diagnosis of pleural or lung metastases. (In these eight cases the patient had survived varying periods from 3 to 12 months before the institution of oestrogen therapy, and in three of these cases the patients survived over 12 months more and are noted as such.)

The survivals in months following the diagnosis in the untreated cases are also shown for comparison in Table I, and the percentage survivals are compared in Table II. From this last table it is seen that 19 out of 61, or 31%, of the treated group survived over 12 months, compared with only 5 out of 66, or 7.5%, in the untreated group. In addition, a further 18% are still alive at periods varying from 1 to 11 months after oestrogen therapy, a proportion of whom may well survive over 12 months. There is, therefore, definite evidence of prolongation of life by the use of oestrogens in these cases. The difference between the proportions surviving over 12 months is greater than the spread to be expected using 95% confidence limits, and is thus statistically significant (Boag, 1948 ; Wood and Boag, 1950).

Mere survival over 12 months is unusual enough, in cases of lung metastasis, to the clinician who sees large numbers of them. In addition, however, it is of interest to assess the final duration of life in these cases.

Fig. 1 shows the survivors month by month in the untreated group and Fig. 2 the survivals in the treated group. It is seen that in the untreated group 57 out of 66 patients died within six months, but in the treated group only 26 out of 52 had died in that period. (A further nine patients were still alive after having been followed up for six months or less.) The average length of survival for the untreated cases was 3.7 months, which is in accord with most clinicians' experience. Finally, it is noted that, whereas in the untreated group none out of 66 cases survived over 18 months, in the treated group 11 out of 61 survived over 18 months, five over 24 months, and three over 36 months. It is thus obvious that the administration of oestrogens leads merely to temporary control of the disease rather than to cure.

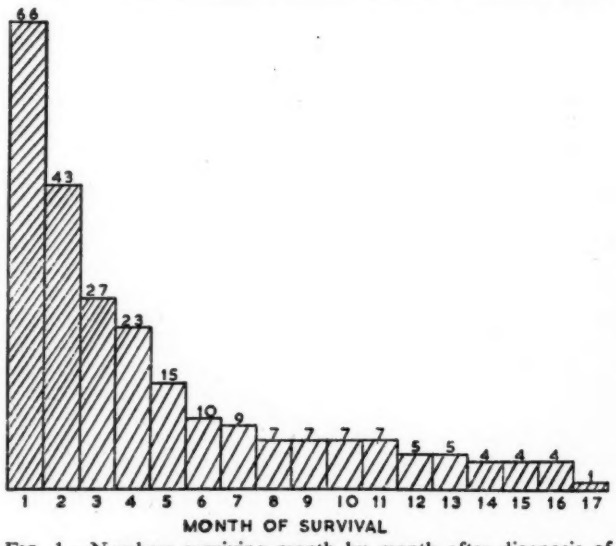

FIG. 1.—Numbers surviving month by month after diagnosis of metastasis. Untreated group, 66 cases.

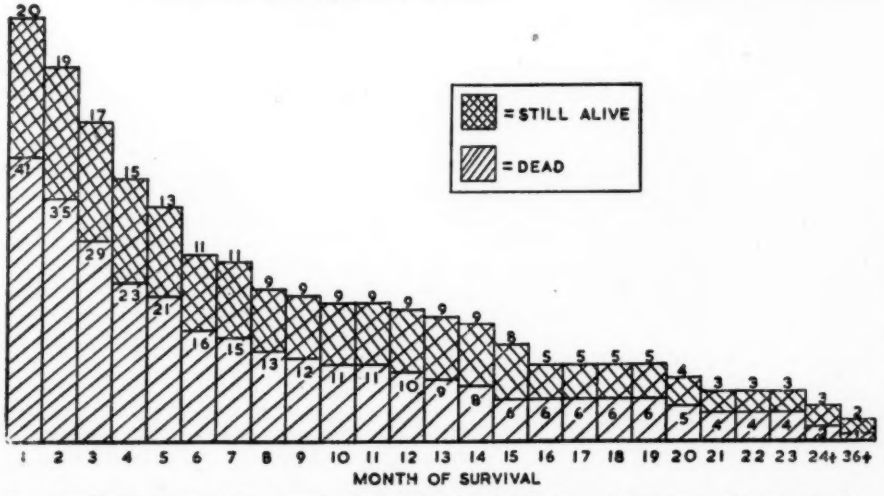

FIG. 2.—Numbers surviving month by month after institution of oestrogens for metastasis; 61 cases

Regression of Pulmonary Metastases following Oestrogens

Apart from prolongation of survival, it is of interest to note the behaviour of pulmonary metastases following oestrogens. As shown in Table III, the cases surviving 12 months or more after oestrogen therapy include 10 out of 21 cases of lung metastases and 9 out of 40 cases of pleural metastases. In the former group 7 out of 10, and in the latter group 9 out of 9, showed radiographic evidence of regression of metastases. Such regression develops after two to four months in the majority, but in some cases there was evidence of new lung or pleural metastases after 12 months. There was evidence of regression of pulmonary metastases also in a further three patients who are still alive but who have not completed 12 months' survival. The total of cases showing radiographic evidence of regression is thus 16 out of 61 cases (26%). When we compare the untreated group we find that, although 5 cases out of 66 survived over 12 months, in no case was there evidence of regression of pulmonary metastases.

TABLE III.—*Regression of Pulmonary Metastases Following Oestrogens*

Lesion	Total Cases	Cases Surviving 12 Months	Cases with Radiographic Regression
Lung metastases ..	21	10	7
Pleural ,, ..	40	9	9
Total ..	61	19 (31%)	16 (26%)

Survival in Relation to Duration and Dose of Oestrogen

The dose prescribed was, in the main, either 2 or 20 mg. of stilboestrol daily, according to the random choice method advocated by the Oestrogen Research Committee set up by the British Empire Cancer Campaign and Royal Society of Medicine.

Table IV shows that of the 39 patients who had taken the drug for three months or more, 57% survived seven months or longer. Of the 22 taking the drug for two months or less, 18% survived over seven months. It would appear from these figures that with more prolonged administration of oestrogens the results are better. In spite of this it must be recalled that it was previously noted that regression of

Table IV.—*Duration of Oestrogen Administered in Relation to Survival*

Duration of Oestrogen	Total Cases	Cases Surviving over 7 Months
Over 3 months	39	22 (57%)
Less than 3 months	22	4 (18%)
Total	61	26

pleural effusion occurred in some cases after administration of oestrogens for two months. It must therefore be assumed that two months is adequate to establish a reaction capable of controlling the disease. It might be relevant to recall at this point that recognizable regression of soft-tissue metastases in breast carcinoma usually occurs after three months' administration of oestrogens (Stoll, 1950).

With regard to the optimal dose of oestrogen, it is seen from Table V that of the 26 cases receiving 2 mg. daily, 35% survived over seven months. This compares with 35 cases receiving 20 mg. daily, of whom 49% survived over

Table V.—*Dose of Oestrogen in Relation to Survival*

Dose of Oestrogen	Total Cases	Cases Surviving over 7 Months
2 mg. daily	26	9 (35%)
20 ,, ...	35	17 (49%)
Total	61	26

seven months. The difference between the two groups is not significant, suggesting that the lower dose is sufficient to exert the maximal possible effect. This is in agreement with the effect of oestrogens on soft-tissue metastasis noted in the previous paper, but does not agree with some other authorities. Walpole and Paterson (1949) noted a better result with 20 mg. of dienoestrol or stilboestrol daily than with 1–2 mg. daily. It must be noted that the oestrogenic potency of dienoestrol is one-fifth that of stilboestrol, and thus the smaller dose of dienoestrol would be equivalent to about 0.25 mg. of stilboestrol daily—a dose which may be quite insufficient.

Effect on Concomitant Soft-tissue Metastases

In 29 of the treated cases there were signs of active growth involving the soft tissues—that is, skin or glands. In only eight of these cases were there signs of regression in these metastases, but five of these survived over 12 months in spite of pulmonary metastases. There is therefore some degree of correlation between the response of the two types of metastasis to oestrogens.

Survival in Relation to Age Group

As noted before, the proportion of cases of a younger age group was considerably higher in the untreated group than in the treated group. In order to assess what possible bias effect this might have on the comparison of the two series, Table VI was planned.

It is seen from Table VI that in the treated group the seven-months survivals in the under 59 and over 60 group

Table VI.—*Survival in Relation to Age Group; Treated and Untreated Cases*

Months Survival	Under 59 Group		Over 60 Group		Total	
	T.	U.	T.	U.	T.	U.
1–3	7	27	16	15	23	42
4–6	7	12	5	1	12	13
7–11	5 } 44%	3 } 13%	2 } 42%	1 } 16%	7	4
12+	6 }	3 }	13 }	2 }	19	5
Total ..	25	45	36	19	61	64*

* Plus two cases, age unknown.

are 44% and 42% respectively. In the untreated group the seven-months survivals are 13% and 16% respectively for the two age groups. There is thus no obvious difference between the age groups in the expectation of life in either treated or untreated groups, and therefore the inequality of the age distribution does not vitiate the value of the control series.

It is of interest to note that in the case of soft-tissue metastases there is generally agreed to be a notable difference between the under 60 and the over 60 age groups in their response to oestrogens. The Royal Society of Medicine symposium in 1944 quoted 14% and 40% regression respectively.

Possible Prophylactic Effect of Oestrogens

In spite of the proved value of oestrogens in the treatment of pulmonary metastases from breast carcinoma, there is no evidence that they exert any protective effect against the development of such metastases even during their administration.

In the period under review 147 patients for whom oestrogens were prescribed for breast carcinoma showed no evidence of pulmonary metastases at the time of prescription. In 41 of these pulmonary metastases developed at a later date (in 15 cases while the patient was taking oestrogens), in 13 within three months of stopping oestrogens, and in a further 13 more than three months after stopping oestrogens. While no prophylactic effect is shown by these figures, there is no suggestion that oestrogens can be incriminated as precipitating pulmonary metastases.

Discussion

Relevant to the regression of pleural effusions in these cases, associated with long-term survivals, it would be useful to discuss the other possible causes, apart from metastases, which might lead to such effusions. The main possibilities are (*a*) idiopathic effusion—usually tuberculous; (*b*) effusion as a reaction to irradiation of the thorax; and (*c*) hydrothorax as a complication of cardiac or renal disease. All these may lead to an effusion which can regress spontaneously.

The differential diagnosis of a malignant effusion depends on certain features. The effusion is said to be blood-stained, but this is not always so, because the fluid may be a transudate following pressure on the pulmonary veins by metastatic mediastinal glands. The presence of neoplastic cells in the fluid is diagnostic, but notoriously difficult to establish. Associated haemoptysis is occasionally noted, and indicates underlying lung involvement; and, indeed, deposits in the lung may often be shown by a radiograph to coexist, or they may develop later. Involvement of the opposite side in the case of unilateral lesions is a more or less inevitable result. The development of spontaneous hydropneumothorax (as seen in two cases in this series) suggests the rupture of a subpleural metastasis in the lungs.

The clinical picture of the patient with malignant effusion is usually typical. A sudden onset of dyspnoea is frequently associated with a very small effusion, the degree of dyspnoea often being apparently out of proportion to the size of the effusion. A malar flush is common and may be due to cyanosis, but is often associated with a degree of pyrexia. Essentially, however, the diagnosis of malignant effusion is presumptive upon the history of breast carcinoma and must be regarded as such unless proved otherwise.

The possibility of pleural effusion resulting from radiation changes must be considered. Although depending on the technique used for irradiation of breast carcinoma, radiation changes in the lungs are not infrequent. As a rule they develop six to nine months after a course of irradiation and usually lead to lung fibrosis, which may persist unchanged for years. Occasionally a transient patch of pneumonitis may develop, mostly soon after treatment. The site of the changes is typical for the irradiation technique used and

TABLE VII.—*Site of Effusion in Relation to Site of Primary Breast Tumour*

Site	Cases in Untreated Group	Cases in Treated Group	Total
Ipsilateral	36	33	69 (80%)
Contralateral	8	4	12 (14%)
Bilateral	3	2	5 (6%)
Total	47	39	86

In two cases the side was unspecified.

TABLE VIII.—*Survival in Relation to Date of Previous Irradiation in the Case of Ipsilateral Effusions*

Months Survival	Months since Last Irradiation of Same Side of Chest				Total
	1–11	12–23	24+	No Irradiation	
1–3	15	8	4	8	35
4–6	7	4	1	5	17
7–11	3	1	—	1	5
12+	1	3	3	5	12
Total ..	26	16	8	19	69

corresponds to the junction of the supraclavicular and tangential fields in the cases treated in the London Hospital radiotherapy department. Pleural effusion is almost never associated with the lung changes, although in 2 out of the 68 cases of effusion in this series there were signs of apical lung fibrosis antedating the development of the effusion by some months.

In an attempt to clarify any relationship between the pleural effusion and the antecedent irradiation, Tables VII and VIII were planned.

Table VII shows that of the 86 cases in which the primary site of effusion is specified, in 80% the site was ipsilateral to the original breast lesion, in 14% contralateral, and in 6% bilateral. When only 19 previously non-irradiated cases are considered the proportion of ipsilateral effusion is 74%, suggesting that ipsilateral effusion is the common result of malignant metastases.

Table VIII shows that 26 out of the 69 cases of ipsilateral effusion developed within 11 months of irradiation being given to that side of the chest. If pleural effusion is a complication of irradiation one might suspect this group of cases, and, if so, it should provide the cases of regression and long survival. In actual fact, 22 out of these 26 patients did not survive six months, and only one survived over 12 months.

We consider that the most conclusive evidence that the effusions were malignant in this series is the death within 17 months of all the patients in the untreated control series.

A final observation is presented on the radiographic appearance of lung metastases from breast carcinoma. Of the 39 cases in the series, 23 presented with a single rounded opacity or multiple mottling in one or both lung fields; nine with lymphangitis carcinomatosa with reticulation throughout the lung fields and increase in the size of the hilar shadow; five with hilar gland enlargement alone; and two with a localized area of collapsed lung with later evidence of further lung involvement.

Regression of lung metastases from breast carcinoma by the use of oestrogens has been quoted by Paterson (1950). There was regression in two out of seven cases.

Case Histories

There were 10 patients with lung metastasis (apart from the nine cases of pleural metastasis) who survived over 12 months. Their case histories are appended.

Case 1.—Aged 67; post-menopausal. October, 1944. history of left mastectomy 23 years before. Patient attended with carcinoma of the right breast. November, 1944, deep *x*-ray treatment of right breast. November, 1945, radiograph showed multiple rounded shadows in the left lung field; stilboestrol, 5 mg. q.i.d., prescribed. April, 1946, lung metastases fading and stilboestrol stopped. January, 1947, recurrence of shadowing and also left pleural effusion; stilboestrol restarted and continued. June, 1947, increase in effusion and spread of left lung metastases. October, 1947, patient died, 23 months after original lung metastases.

Case 2.—Aged 66; post-menopausal. July, 1948, attended with ulcerated carcinoma of right breast and fixed axillary glands. October, 1948, radiograph showed multiple rounded shadows in both lung fields (Fig. 3); stilboestrol, 0.5 mg. q.i.d., prescribed and continued. January, 1950, deep *x*-ray treatment of right breast in view of response of lung metastases. July, 1950, partial regression of lung metastases (Fig. 4). February, 1951, patient alive and slightly dyspnoeic on exertion, 28 months after the original lung metastases.

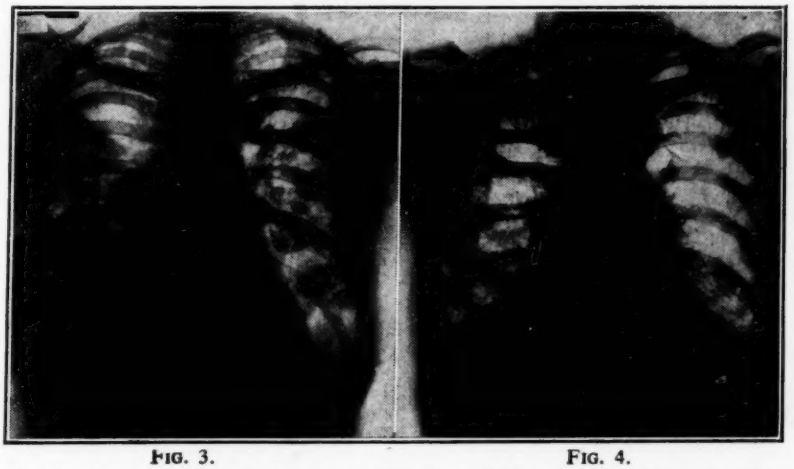

FIG. 3. FIG. 4.

FIG. 3.—Case 2. Radiograph taken on October 1, 1948, showing multiple rounded shadows in both lung fields. FIG. 4.—Case 2. Radiograph on July 12, 1950, showing partial regression of lung metastases.

FIG. 5. FIG 6.

FIG. 5.—Case 7. Radiograph on February 28, 1950, showing multiple rounded opacities in mid-zones of both lungs. FIG. 6.—Case 7. Radiograph on February 2, 1951, showing partial resolution of lung opacities.

Case 3.—Aged 53; post-menopausal. April, 1945, right mastectomy followed by deep *x*-ray treatment for breast carcinoma. January, 1947, right supraclavicular metastases treated by deep *x* rays. October, 1947, radiograph showed prominence of both hilar shadows and reticulation in the lung fields, diagnosed as lymphangitis carcinomatosa. January, 1948, stilboestrol, 5 mg. q.i.d., prescribed and continued; deep *x*-ray treatment given to pelvic metastases. August, 1949, decrease in size of hilar shadows, and lung fields appear clearer, although right diaphragm now raised. January, 1950, patient died, 27 months after the original lung metastases.

Case 4.—Aged 52. October, 1945, right mastectomy for breast carcinoma. January, 1946, radiograph showed rounded shadow at right costophrenic angle; stilboestrol, 0.5 mg., prescribed and continued for 14 months. April, 1946, deep *x*-ray treatment to mass on right chest wall. March, 1947, deep *x*-ray treatment to left supraclavicular metastases. July, 1947, shadowing at right base unchanged. In addition there was a right interlobar and left basal effusion, and generalized increase in lung markings. September, 1947, patient died, 19 months after the original lung metastases.

Case 5.—Aged 75, post-menopausal. December, 1945, attended with carcinoma right breast. January, 1946, deep *x*-ray treatment to right breast and glandular areas. June, 1947, radiograph showed bilateral hilar gland enlargement; stilboestrol, 5 mg. q.i.d., prescribed and continued. February, 1951, radiograph showed clearing of hilar shadows; patient alive 44 months after original mediastinal metastases.

Case 6.—Aged 65; post-menopausal. March, 1948, right mastectomy for breast carcinoma, August, 1948, post-operative deep *x*-ray treatment to right chest wall and glandular areas. December, 1949, radiograph showed multiple rounded opacities in both lung fields. January, 1950, deep *x*-ray treatment to right supraclavicular metastases. December, 1950, stilboestrol, 0.5 mg. q.i.d., prescribed and continued. March, 1951, radiograph showed no change in lung shadows. May, 1951, patient alive 17 months after original lung metastases.

Case 7.—Aged 71; post-menopausal. July, 1947, right mastectomy for breast carcinoma. November, 1947, post-operative deep *x*-ray treatment to right chest wall and glandular areas. February, 1950, radiograph showed multiple rounded opacities in mid-zones of both lungs (Fig. 5); stilboestrol, 5 mg. q.i.d., prescribed and continued for seven months. February, 1951, radiograph showed partial resolution of lung opacities (Fig. 6). April, 1951, patient alive 14 months after original lung metastases.

Case 8.—Aged 59; post-menopausal. September, 1949, attended with carcinoma right breast and fixed axillary glands; radiograph showed rounded multiple opacities in both lung fields. November, 1949, deep *x*-ray treatment to right breast. February, 1950, stilboestrol, 0.5 mg. q.i.d., prescribed and continued. April, 1951, radiograph showed partial resolution of lung opacities. May, 1951, patient alive 20 months after original lung metastases.

Case 9.—Aged 66; post-menopausal. August, 1949, attended with carcinoma left breast and fixed axillary glands; stilboestrol, 5 mg. q.i.d., prescribed and continued. October, 1949, deep *x*-ray treatment to left breast and glandular areas. February, 1950, radiograph showed bilateral hilar gland enlargement with extension into lung fields; diagnosed as lymphangitis carcinomatosa. June, 1950, shadowing on right side cleared after four months. October, 1950, testosterone, 800 mg. monthly, prescribed for ulceration of left breast which was not responding to stilboestrol. April, 1951, radiograph showed decrease in left lung infiltration; breast ulceration regressing on testosterone. May, 1951, patient alive 15 months after original lung infiltration.

Case 10.—Aged 47; cyclical. October, 1943, deep *x*-ray treatment to carcinoma right breast with multiple skin nodules. December, 1944, radiograph showed opacity in right lower zone, ? nature; this increased slowly in size. July, 1946, stilboestrol, 5 mg. q.i.d., prescribed and continued for 13 months. December, 1947, radiograph showed no new opacities; stilboestrol stopped. June, 1948, radiograph showed multiple opacities in right mid zone, left basal effusion, and radial shadowing suggesting lymphogenous spread; stilboestrol restarted. November, 1948, patient died, 47 months after original lung shadowing.

Summary

A report is made on 61 cases of pleural or lung metastasis secondary to breast carcinoma treated by oestrogens. A series of 66 similar cases which were not treated is used for comparison.

In the treated group 31% of cases survived over 12 months, as compared with only 7.5% in the untreated group. In the treated group 26% of cases showed regression of pulmonary lesions, compared with 0% in the untreated group.

The possibility of a non-malignant aetiology in the cases with long survival is discussed.

The effect of oestrogens in these cases is essentially temporary, and no prophylactic effect against the development of pulmonary metastases can be shown.

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TEN YEARS' CLINICAL EXPERIENCE OF MODIFIED LEUCOTOMY OPERATIONS*

BY

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It is over 10 years since some of us, evacuated to Sutton Emergency Hospital from the Maudsley Hospital during the last war, decided to approach Mr. Wylie McKissock, of St. George's Hospital, about attempting modifications of the standard leucotomy operation, then being used in America by Freeman and Watts, so as to investigate its possibilities in the treatment of selected neuroses. I had already seen some results of the early full standard leucotomy in Washington in 1938, and it was obvious then that this operation would come to be used in the neuroses, but cuts would have to be modified, if possible, to try to prevent some of the sequelae seen in these patients. A little later on Mr. G. Knight also offered to help in such work at the West End Hospital for Nervous Diseases.

Experimental Work

Our earliest experiments were not as satisfactory as one would have desired. We were able to do some at our own hospital, but in those days permission to perform such operations had to go through varied L.C.C. and E.M.S. administrative channels, and viewpoints could be so conflicting that varied makeshifts had often to be employed to enable them to take place at all, even on the most carefully selected and studied patients.

*Paper given at a meeting of the Royal Medico-Psychological Association on February 12, 1953.

These sometimes had to be transferred for operation unofficially to the neurosurgical units of voluntary hospitals, where more freedom of action existed, but this meant also that they then had to go straight home, often at the end of a fortnight, and be followed up as well as possible as out-patients. However unsuitable this was for research purposes, recent developments have made this earlier work well worth while, for it has enabled us to have interesting follow-ups of up to 10 years' duration in cases of neuroses with limited cuts, and as the atmosphere has become progressively more favourable to such work about 80 neurotic patients have now been operated on at Sutton (recently renamed Belmont Hospital) out of the many thousand admissions there, and often months have been spent before or after operation, if necessary, in studying the individual cases in hospital.

In the past four years it has also been possible to work with Mr. Harvey Jackson at St. Thomas's Hospital on the use of other modified forms of operation in the neuroses and to explore their value in yet another new field—the so-called "psychosomatic" disorders. One can hope that some of the results obtained (Sargant, 1951) will make this work at least as acceptable in the next 10 years as the use of modified procedures has become to-day in the ordinary neuroses.

I think English clinicians may truly claim to be among the early workers in this field. Dax (1949) and Radley Smith were beginning to experiment with modified cuts in cases of psychoses in 1942, as we were in cases of neuroses. By 1944 Slater and I were already able to stress, as a result of our early findings, that "for each patient the minimum of brain tissue must be destroyed that will produce the desired clinical effect," and that "the operative skill of the surgeon is required to ensure that the operation is not so extensive and destructive" as to produce unnecessary and undesirable sequelae. It was also possible to outline some of the more obvious clinical indications and contraindications resulting from our earlier work (Sargant and Slater, 1944; Sargant and Stewart, 1947).

The "Post-leucotomy Syndrome"

However, at the end of the war it still seemed generally accepted in America that extensive cuts and post-operative confusion were necessary in order to obtain satisfactory results, and workers, such as Rylander (1948) in Sweden and others in this country (Ström-Olsen and Tow, 1949), were still subjecting cases of neuroses to full and often posterior "standard" operations. Such operations were taking a quite needless toll of a neurotic patient's remaining personality assets. Unfortunately, it is the published and understandably gruesome findings of some of these workers that still provide the major ammunition for the hostile criticisms of this operation in the medical and lay press alike. As a result, it is generally necessary to reassure neurotic patients and their relatives that such methods have been abandoned as a routine measure for many years now at centres specializing in neuroses in England.

An independent follow-up study of 30 patients operated on at Sutton eighteen months to eight years previously (Baker and Minski, 1951) showed, in fact, that no so-called "post-leucotomy syndrome" common to the group was recognizable as such, and the view was expressed that the findings of others in this respect were possibly due to persistence of previous personality defects or disease symptoms, or because the cut had been made too far posteriorly or in other anatomically undesirable areas. Rylander (1952) has also confirmed that, with undercutting of the lower quadrants only, no undesirable personality changes were found in a careful follow-up of his patients. Without hesitation or equivocation, one can now say that it is wrong to subject the ordinary run of neurotic patients, and many psychotic patients for that matter, to a routine full standard operation till modified procedures have been tried first.

Modifications of Procedure

Since 1942 it has been possible to work with four British surgeons on various modified procedures and to see the work of many others in the U.S.A. All sorts of modifications have been attempted in selected patients, including full sweeps involving both the upper and lower quadrants of the frontal lobe done further forward, and section of the lower quadrants only, first used by McKissock in 1943.* Transorbital leucotomy was done on one of my patients while I was in the U.S.A. in 1948, and I saw the results in other cases. In the same year an open "rostral" type of leucotomy was also carried out by Mr. Guy Odom at my request at Duke University, and Mr. McKissock has been doing both open and closed rostral and medial quadrant operations at Belmont Hospital in recent years. In the past four years at St. Thomas's, special attention has again been paid to section of the lower quadrants by Mr. Harvey Jackson in the neuroses and psychosomatic states. Deteriorations resulting from full cuts have been seen for comparison from time to time and when the operative results from other workers have been examined, or complications have occurred, and also when a surgeon has obviously misplaced the cut in too posterior a manner—a greater or less risk that must still unfortunately be reckoned with in all decisions on whether or not to operate in a particular case by any particular method.

It is no longer as easy to believe those who have suggested that the thing that really matters is the quantitative amount of brain damage done in the prefrontal lobe rather than its actual site. My own clinical impressions increasingly support Fulton's (1952) work on animals, that the more you keep to the region of the inferior medial quadrant the safer you are. The further one ventures from this area the more likely is one to run into undesirable sequelae, though the farther forward the damage the better. Especially with broad foreheads, cutting the fibres in this area by a lateral approach may be difficult unless special techniques are employed, and many patients still showing tension after an apparently full cut may be, in fact, those in whom important fibres in this quadrant have unfortunately been missed. Many reoperations on this quadrant may have to be performed in the future when this fact is more generally realized.

Quantitative factors in the cut are also very important, but I believe it will be finally shown that to obtain the best clinical results with the minimum of undesirable sequelae in neuroses the site of the operation is more important still. This may be the reason why Freeman's new deep frontal cut, using the transorbital route (Freeman and Watts, 1950), is apparently achieving many successes in the U.S.A., since it produces its maximum damage in just this lower medial area of the frontal lobe. There are also far fewer psychotic patients than is generally supposed who need to pay the price of a full posterior cut for their release from a mental hospital, though the deliberate production of emotional blunting is necessary in some. Greenblatt and Solomon's (1952) findings in the U.S.A. with what is termed "bimedial leucotomy" should be carefully studied in this respect.

Clinical Selection of Patients

The use of these limited cuts has, of course, entirely transformed the clinical possibilities of leucotomy. One can now promise the properly selected patient that, barring accidents, he will certainly not come to great harm, though total relief of distressing symptoms may not be as dramatic

*One of these patients operated on then, at the age of 68, is still enjoying a hale, hearty, and happy old age at 78, without any recurrence of his chronic tension state and attacks of severe recurrent depression. He remains a regular attendant and a sidesman at his church, an equally regular attendant at his bowling club, and recently won two first prizes at three consecutive whist drives.

and certain. With increasing surgical skill and modified operations, these accidents are becoming relatively fewer, and, like death from the operation, because of their increasing rarity need not now weigh too prominently in the final decision. Provided the right clinical indications are present, operations can be performed, if necessary, in intractable psychosomatic states, in anxiety hysteria, and in anxiety and depressive states in obsessive personalities. Such patients will also often do much better than severe obsessionals where a more extensive operation may be necessary, as in the chronic psychotic, to remove symptoms making life so intolerable. One finding has been consistently true in the past ten years : the more worried you become about subjecting a well-preserved neurotic patient to a modified leucotomy because the basic personality remains good, the better he will do. Your unhappy results will be in those on whom you have recommended an operation more lightheartedly because their personality is not so well-preserved and there is so much the less to lose. Some hospitals get disappointing results because they choose patients from among their worst clinical material rather than their best, even after all other methods have failed to help the patient, and he or she remains totally incapacitated by illness.

When using restricted cuts in the neuroses there are certain principles that still have to be observed to avoid disaster, apart from those already mentioned. One must be constantly on the look-out for schizophrenic features hiding under the presenting picture of an obsessional neurosis. For in partially relieving the obsessional component by operation you may be simply facilitating the emergence of more incapacitating schizophrenic thought disorder. There is no need to be worried by the presence of secondary hysterical features in the total presenting picture, provided they are being released only by underlying anxiety or obsessive tension. The malignant hysteric without anxiety and obsessive features probably does as badly, however, as the chronic hebephrenic. But in long-term follow-ups some good results will occur in chronic phobic states in mixed hysterical and obsessive patients. It is wise to pay special attention to body build, for the results in those of good muscular physique will be generally more satisfactory than in the constitutional asthenic. One should be very cautious in all states of psychopathy, or where paranoid features are deeply rooted in the basic personality rather than being merely part of a recent illness. One need not be too worried by symptoms of ill-temper which are found to be due solely to underlying tension resulting from the illness itself and do not occur when the patient is relaxed. But it is wise to avoid those patients in whom a quick temper is part of their normal constitutional endowment and which occurs without much tension, and in a total setting so frequently seen in the explosive psychopathic patient. In selecting neurotic patients for operation, one must always try to estimate what personality assets will remain if tension and obsessive thinking are diminished. In some patients this may be beneficial and in others harmful to their future social adjustment. If they are already impulsive and lacking in foresight the operation may make them more so, but there are so many other patients totally unable to live at all in the present because of numerous anxious preoccupations with the past and future. These can be made more normal by modified operations.

Finally, in choosing patients for modified leucotomy operations one should have available all other methods, such as psychotherapy, drug abreaction, intravenous acetylcholine therapy, E.C.T., modified insulin, and skill in the use of routine sedation in the hope that operative measures may be avoided. Many of the results obtained at Sutton and at St. Thomas's have been good because all other methods were available for trial first and a long period of preliminary study as an in-patient could be undertaken when necessary.

Psychological Testing

A word should be said about psychological testing as opposed to clinical psychiatric examination in the selection of patients for these modified procedures and in assessing results. One can only beg competent clinicians not to rely too much on such tests at the expense of their mature clinical judgment, otherwise clinical perspectives can become distorted. The criterion of success or failure is best measured by whether the patient and the relatives are pleased or displeased, and by the subsequent work record and social and ethical adjustments shown. We do the operation for social and personal reasons, and not because a theoretical I.Q. may rise or fall a point or two, or some selective psychological testing shows what may prove to be an unimportant change socially for the patient concerned. I for one have now abandoned routine psychological testing, till further progress is made, in favour of clinical assessment, except in certain circumstances. For instance, it is somewhat useful to check the I.Q. before operation, because those with higher I.Q.s will generally do better than those with the lower ones. A Rorschach test in skilled hands may also detect latent schizophrenic features missed in the most careful clinical examination, which may prove a contra-indication in the young obsessional patient. For follow-up purposes I prefer clinical and social assessment to reliance on tests, which so often fail when they are most needed in assessing emotional rather than intellectual alterations that may have occurred.

Problems of Relapse

With the increased use of modified operations one is faced with the important problem of relapse. Recently one has occurred with a reasonably full cut as late as nine years after operation and an intervening period of good health. Some are also occurring four to five years after operation, and others have happened in as early as a month. Relapses occur with all types of operation, but in the case of modified techniques further improvement may often be obtained by reoperation, still without resorting to too posterior a cut. We have had several successes with reoperation when satisfactory improvement has been followed by relapse. Many years may also have passed between operations, but reoperation still helps.

One obsessional patient had his first operation in 1943, confined to the lower quadrants ; he was generally improved for three months and then relapsed. It was not until 1948 that he was persuaded to have a more extensive cut, and he has since maintained his improvement. Another patient also had his first operation in 1943, relapsed, and was quickly reoperated upon ; he was then able to stay at work till a recent follow-up revealed that he had again relapsed in 1951 ; the possibilities of his further treatment are now being explored. A patient with chronic tension, with an anterior total sweep at operation in 1947, relapsed in 1951, and had a second operation in 1952, again with benefit, but this time the second operation was confined to the medial quadrants only. I am noticing less tendency to relapse in lower-quadrant cuts done by Mr. Harvey Jackson recently, compared with those attempted in earlier years, possibly because we are now paying more attention to the inner quadrant than formerly. This finding would bear out recent observations by those doing open operations in this area in France, England, and the U.S.A., but we need a longer time to be certain on such points.

Social and Religious Considerations

On these matters, too, one can be most definite after ten years. If anterior and limited cuts are used conventional religious and ethical values are rarely irrevocably lost. Fanaticism on any topic may no longer be as easy to maintain, but more balanced points of view on religious and social issues are again made possible to the patient. Several of my patients have certainly had their religious faith heightened with the healing of their minds and a better ability to think of things beyond their own immediate and intense personal suffering. One patient has had two episodes of religious reawakening after each operation, which has also helped him on each occasion to attain better social adjust-

ments. A compulsive thief, of otherwise obsessional temperament, now works contentedly surrounded by lady clerks' handbags in an office—an impossibly provocative social situation for him before the operation. Two female patients with restless sexual propensities based on feelings of insecurity and tension have settled down to happier marriages than expected, one after rostral leucotomy and the second after a more posterior reoperation. One should, however, be very cautious in the presence of sex perversion or fetishism. Such patients provide striking contrasts to some seen in whom posterior cuts have resulted in loss of all feeling for others and a selfish egotism which may destroy the happiness of a whole family or group. The previous personality must be taken into consideration in final judgments on such issues, as socially undesirable traits not recognized before operation can be enhanced in certain instances even by limited cuts.

Therapeutic Persistence

I would also like to stress the need for therapeutic persistence and the use of all methods before too deteriorating procedures are finally decided upon or the too ready throwing in of one's hand when confronted with difficulties after modified leucotomy. One patient with a very severe obsessional neurosis had had 15 years of psychoanalysis and supportive therapy on and off before faith was finally lost by both patient and therapist alike in this approach, and modified leucotomy agreed to. This resulted in some relief of tension but a release of severe paranoid and depressive symptoms. These complications then had to be dealt with by the giving of insulin and E.C.T. A second operation, still confined to the lower quadrants but farther back, relieved further tension, but obsessional thoughts persisted. She is now being treated as an out-patient with intravenous acetylcholine injections and occupational therapy, where some might have decided that after the failure of so much psychotherapy, the first leucotomy, and the complications that ensued there was nothing more to be done; especially as a full operation was thought to be contraindicated in this particular patient because of certain personality traits. If one's operative efforts are not irretrievable it always leaves hope that other measures, short of deteriorating cuts, may be effective which would have failed before. Thus some phobic states may be further helped by intravenous acetylcholine injections after the edge has been taken off the patient's anxiety by modified leucotomy; and treatment with E.C.T. and insulin may become effective in depressives and schizophrenics where it has failed before. We have seen several examples of this. In addition, a reasonably intact personality is still preserved. Time for further psychotherapy can also be gained.

Conclusion

I must finally pay my very grateful tribute on behalf of all psychiatrists here to the many neurosurgeons in England for all the patience and co-operation they have shown us in our often stumbling and hesitant efforts for the relief of mental suffering by a method which is as yet obtaining only a hazardous social and medical respectability. I am certain, however, that a large number of psychiatric patients would echo these thanks. They and their families should be the real judges of our success or failure, and not our own theoretical prejudices and emotionally toned judgments. Psychiatry often creates insoluble difficulties for itself when we leave the patient's bedside and become too involved in speculative philosophical issues. If we are only content to remain doctors, constantly searching for new and better practical ways of trying to help our individual patients, the future of leucotomy is assured—at least until better ways are discovered for the practical relief of so much persistent individual human misery and social incapacity.

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ANAL FISSURE

BY

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An anal fissure is a triangular ulcer at the anal verge, extending into the anal canal. The lesion is often associated with severe pain, and when untreated tends to run a course of exacerbations and remissions.

Aetiology and Pathology

The fissure begins as a tear at the anal verge. This tear might be caused by the passage of unusually large or hard faeces (sometimes enema tubing) or may be related to temporary incoordination of the external sphincter, with slow relaxation of the subcutaneous part. The elliptical shape of the superficial portion of the external sphincter leaves vulnerable the midline posteriorly, and hence the fissure is nearly always in this position. The anterior fissure is seen almost exclusively in the female, and is due to the unprotected anterior segment.

A fissure is about 2 cm. long and 1.5 cm. wide, and the apex extends just above the anal intermuscular septum, to overlie the lower border of the internal sphincter. At first the fissure is uncomplicated. The floor contains longitudinal fibres of the corrugator ani muscle. Their presence indicates the shallow depth of the ulcer and a likelihood of healing without surgical intervention. If a skin tag ("sentinel pile") be present, it is small. There is no induration of the base, but the fissure is extremely tender and associated with much sphincter spasm.

This spasm prevents the ulcer from healing. It deepens, and the floor is then formed by circular fibres of the subcutaneous portion of the external sphincter. The skin tag is often large and oedematous; at the proximal end of the fissure the mucous membrane becomes polypoidal. This secondary mucosal polyp is found in a high percentage of chronic anal fissures. The edges of the ulcer are well defined and overlap the floor of the ulcer, so that the true size is concealed. Infection is an important complication of the fissure. The inflammation is localized and may end in suppuration, with abscess formation; this usually discharges into the anal canal to form a blind internal fistula. Much less often the abscess discharges on to the perianal skin, with the formation of a low anal fistula.

Clinical Features

Males and females are affected with equal frequency. The pain is described as burning, shooting, or aching in nature, and is related to defaecation; sometimes the act is extremely painful, but more often the pain begins half an hour after and drags on for another hour or two.

Passage of blood with the motions is alarming to the patient even though it is slight in amount; it is usually observed on the toilet paper as well as on the motion. If the patient has associated haemorrhoids their prolapse might be, to the patient, the obvious cause of the discomfort.

The fissure can always be seen without subjecting the patient to the agony of rectal palpation. The buttocks are firmly parted and the anal verge inspected; this in turn is gently opened with the index fingers of each hand. If the surgeon has secured the confidence of his patient the subcutaneous sphincter will relax to reveal the fissure in most of its length and the surgeon can see the floor without difficulty. Palpation must often be confined to the perianal region, searching for evidence of deeper infection, but in the more patulous type of anus it is possible to push the finger upwards along the anterior segment, and, gently turning the finger, palpate the upper end of the fissure for a polyp while the base of the fissure can be felt between the forefinger and thumb.

Proctoscopy and sigmoidoscopy should not be attempted at this stage. Carcinoma of the rectum and sigmoid practically never coexist with an anal fissure, although they are excluded by subsequent sigmoidoscopic examination.

Treatment

The treatment advised will depend upon the type of fissure, the nature of the patient, and the preference of the surgeon.

1. Conservative Treatment

A small number of cases respond to conservative measures. The bowel habit is regulated by adjusting the diet and by prescribing aperients, particularly paraffin oil. Just before the bowel action the patient passes into the rectum a finger lubricated with an ointment containing a surface analgesic, such as cinchocaine 10%. Acute fissures which are shallow and contain longitudinal fibres in their floor may respond to such treatment, but even in these the outcome is unpredictable. Further, some patients are sensitive to cinchocaine and other such ointments and develop a rash around the anus, whilst others are disturbed by the pain and by the slowness of the cure and seek more active measures.

2. Injection

Injection treatment appeals to many because success, when it comes, is often dramatic. Either the water-soluble procaine hydrochloride or the oily solution "proctocaine" can be used. The effect of the latter is said to last longer, but this is disputed, and certainly complications following its use are seen in cases referred to the proctologist.

The injection is best made with the patient in the right lateral position (for the right-handed surgeon). The left index finger is inserted into the anal canal, and after cleaning the skin a subcuticular wheal is raised with procaine. The needle is then pushed forwards, first on one side of the anal canal and then on the other, and 5 ml. of proctocaine or procaine injected on each side in order to cause temporary relaxation of the sphincter muscle; 1 or 2 ml. is finally injected into the base of the ulcer. The sphincters promptly relax and enable a second finger to enter the anal canal alongside the first. The muscles are then gently stretched.

Injections in this region are usually acutely painful, so that a failure is the more disappointing to the patient. Injections in such a contaminated area may cause abscess and fistula formation. If proctocaine be injected too superficially a necrotic ulcer will develop.

3. Digital Dilatation

The most popular method of treatment is digital dilatation of the anal canal. The patient is given a general anaesthetic, and the anal canal is gently stretched until two or more fingers can be inserted into it.

Again this simple method may produce a permanent immediate cure. But it is uncertain: an over-vigorous stretch has caused serious damage to the sphincter muscle; whilst one too gently performed is ineffective. Carefully done with local analgesia and combined with dietetic and habit adjustments, it can be recommended for the uncomplicated fissure.

4. Excision of Fissure

Radical cure of an anal fissure entails excision of the ulcer, with division of the subcutaneous sphincter muscle. The patient is anaesthetized and placed in the lithotomy position. The fissure is then excised. A triangular piece of skin is outlined, with the apex at the anus and base outwards and including the fissure ulcer. It is dissected upwards off the underlying tissue. The subcutaneous sphincter is divided in the centre of the wound, and the two ends retract to leave a wound approximately 1½ in. (3.8 cm.) long and 1 in. (2.5 cm.) wide (Fig. 1).

Gabriel (1930, 1952) advises that this wound be left open and be permitted to heal by second intention. This entails a prolonged regime of some weeks before the wound is healed. The surgeon must be careful to keep the wound flat so that pockets will not form. In good hands the results of the operation are excellent, but if the surgeon be less vigilant the scar puckers to leave a tight anus, with the possibility of recurrence.

Suture of the wound cannot be recommended, because the danger of abscess and fistula formation is too great. Moreover, when the wound is sutured there is a possibility of the anus becoming constricted and again favouring recurrence.

The best treatment is to apply a split-skin (Thiersch) graft to the wound after excision (Hughes, 1952). After excision in the manner outlined above, a row of guy sutures are placed in position along either side of the wound (Fig. 2). A graft of split-thickness skin is taken from the leg or arm, applied to a mould of tulle gras and wool (Fig. 3), and then held firmly in the wound as the guy sutures are tied across the back of the mould (Fig. 4). A preliminary course of succinylsulphathiazole before the operation and antibiotic therapy post-operatively controls any tendency for contami-

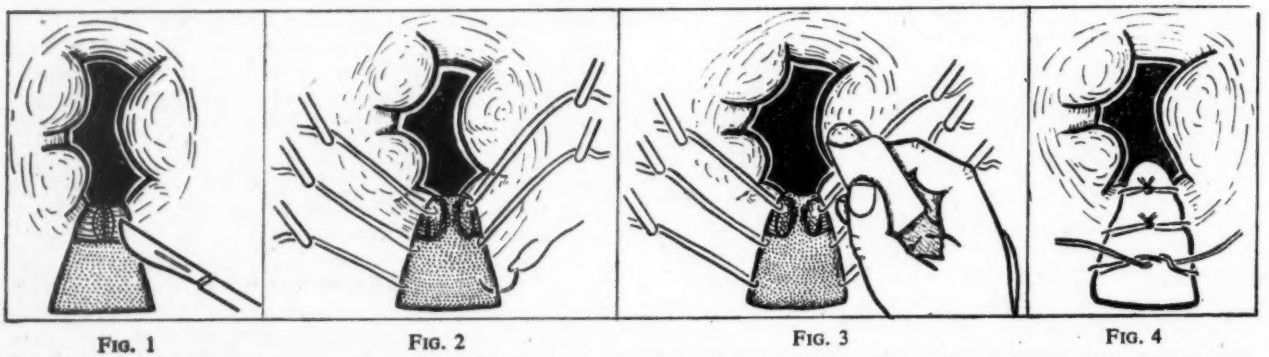

Fig. 1 Fig. 2 Fig. 3 Fig. 4

Fig. 1.—The subcutaneous portion of the external sphincter is divided. Fig. 2.—Guy sutures are inserted along the edges of the wound. Fig. 3.—A mould is made of tulle gras and wool; over the face of the mould is laid the split skin graft. The mould with graft is placed in the wound. Fig. 4.—The graft is secured by tying the guy sutures across the back of the mould.

nation to develop into infection. The antibiotic therapy consists of penicillin "distaquaine" fortified, 300,000 units, and streptomycin 0.5 g. both three times a day for four days, The graft is inspected on the fourth or fifth post-operative day and the mould removed. Any excess skin is removed and a piece of cotton-wool is placed over the grafted area to keep it dry. The patient is discharged on the fifth or sixth day post-operatively with the wound healed.

Goodsall (1892) practised sphincterotomy with good results. He did not excise the ulcer but simply cut through the subcutaneous sphincter. The wound healed by secondary intention. In patients with chronic fissures who are unwilling to undergo operation this process has more to commend it than digital dilatation.

Discussion

An anal fissure is a non-malignant condition of the anus, causing acute discomfort to the patient. He asks for relief, but is reluctant to accept a treatment that demands an absence from work for any prolonged period.

Acute uncomplicated fissures not uncommonly respond to more conservative measures. The patient is advised of the nature of his condition, suitable adjustment is made to his diet to give a bulky but soft stool, and digital dilatation is practised; an injection of local analgesia often helps to break the vicious circle by enabling the surgeon to dilate the anus gently.

Chronic fissures, particularly those complicated by some degree of infection of the deeper tissues, are unlikely to obtain permanent relief by such measures. If an anaesthetic is to be given to the patient, the fissure is best excised so that recurrence is prevented. If there are associated haemorrhoids, these should be removed. After excision of the fissure and division of the subcutaneous sphincter the wound can be left open to heal by secondary intention, but this prolongs the convalescence, demands daily dressings and keen appreciation by the surgeon of the importance of a flat wound until completely covered by epithelium, and still leaves a scar which as it matures might be responsible for recurrence of the fissure. Therefore I favour primary skin-grafting to the wound after the fissure has been excised (Hughes, 1952). The period in hospital and that of convalescence are much shortened, no dressings are required after the grafted area has been inspected, the absence of granulation tissue eliminates fibrosis, and the chances of recurrence of the fissure are slight. The results of primary skin-grafting have been excellent: all 12 cases subjected to excision of the anal fissure combined with primary skin-grafting have had a 100% "take" and all have left hospital within a week of the operation with the fissure removed and the wound healed.

Summary

The aetiology and pathological and clinical features of anal fissure have been briefly reviewed. The acute but otherwise uncomplicated fissure may respond to treatment administered in consulting-rooms, but chronic fissures, particularly those complicated by infection, superficial or deep, usually require more radical treatment. The fissure should be excised, the subcutaneous sphincter divided, and a primary split-thickness skin graft applied. The fissure is removed and the wound completely healed during a stay of six to seven days in hospital.

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INTESTINAL PROTOZOA IN MENTALLY DEFICIENT CHILDREN

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Specimens of faeces from mentally deficient children in the wards of Harperbury Hospital, Shenley, Hertfordshire, were examined by various methods in order to ascertain the degree of infections by intestinal protozoa.

This paper gives particulars of the methods used and the results obtained in a "pilot" survey which was undertaken during September and October, 1952.

Materials and Methods

The total number of mentally deficient children currently treated at Harperbury Hospital was 56. Specimens of faeces for this survey were secured from 50. All those examined were male. Their age distribution and the duration of their stay in hospital were as follows:

Age	No. of Children	Time in Hospital	No. of Children
5 to 7 years	10	Less than 3 years ..	8
8 to 10 ,, ...	15	From 3 to 5.9 years ..	21
11 to 13 ,, ...	18	From 5 to 8.9 years ..	18
14 to 17 ,, ...	7	Over 9 years	3
Mean age of the group 10 years		Mean duration, 5.36 years	

The children came from the London and Middlesex areas, and none had resided in a tropical or subtropical country. There was some contact between them and outside because they attended school. Intestinal disturbances were not uncommon.

Specimens were placed in new clean waxed cream cartons and carried by messenger to the London School of Hygiene and Tropical Medicine. When received they were usually 3 to 5 hours old, but in a few instances they were from 10 to 12 hours old. Most of the specimens were formed. Each batch was inoculated at once in culture media, then examined directly and after concentration. Particulars of the techniques follow.

Direct Examination.—In addition to the direct films in saline and iodine (double strength Gram's iodine) a third film was made in a drop of 1% aqueous solution of eosin. This procedure (Kuenen and Swellengrebel, 1913), besides improving the efficiency of the direct examination (three films seen instead of the usual two), has some other advantages. The eosin solution has the property of staining everything in the stool pink, except living protozoa. On this pink background the living protozoa (and their cysts) stand out prominently as colourless, pearl-like, refractile bodies which can be recognized very easily even with the 2/3 objective. Moreover, the chromatoid bodies of the cysts of *Entamoeba histolytica* (invisible in the iodine preparation) are much more distinguishable in eosin films than in ordinary saline preparations. Each of the three films of the direct method was examined for about 10 minutes, first under the 2/3 objective and then under the 1/6 (with a × 10 eyepiece).

Concentrated Specimens.—The original centrifugal flotation technique of Faust *et al.* (1939) was modified in order to facilitate detection of cysts of the smaller intestinal protozoa. Tests were made with denser solutions of zinc sul-

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phate, the specific gravity of which was increased by steps of 0.02. Finally it was found that the specific gravity of the zinc sulphate solution could be increased from 1.18 to an optimum of 1.28, which corresponds to a 51% solution. This new centrifugal flotation technique can be summarized as follows :

1. Take a piece of faeces the size of a walnut and emulsify it in tap-water, using a pestle and mortar to ensure a uniform suspension.

2. Strain off large particles by pouring the solution through a copper wire sieve of about 40 mesh to the inch into a bowl (wet the sieve before use).

3. Centrifuge the emulsion at about 3,000 revolutions a minute for about three minutes to obtain a deposit.

4. Pour off supernatant fluid and break up deposit with a glass rod.

5. Half fill the tube with 51% zinc sulphate, stir with the glass rod and complete suspension by *gently* inverting the tube after closing the mouth with the thumb or cork. Try to avoid the formation of bubbles, as these will interfere with the final " film."

6. Fill the tube nearly to the brim with the zinc sulphate solution and mix again by gently inverting the tube several times as before.

7. Centrifuge at about 3,000 revolutions for three minutes and allow the tubes to come to rest gradually without disturbance.

8. Remove a portion of the film on the top of the fluid by a loop bent to lie in a horizontal position and deposit a loopful on each of two slides.

9. Add a little 1% eosin to one and Lugol's iodine to the other, mix in and cover with a coverslip.

N.B.—Do not delay the dilution in eosin and iodine after the cysts have been exposed to zinc sulphate, as they tend to collapse after about 15 minutes in this strong solution.

Each of the two slides of the concentrated specimen was examined for 10 minutes, bringing the total time devoted to the examination of every specimen, either positive or negative to approximately 50 minutes. A certain number of faecal specimens were examined more than once by the above methods.

Cultivation.—As soon as the specimens were received they were inoculated in culture media—Dobell's HSre medium, or modified Tanabe's medium for intestinal flagellates, or Rao's (1951) modified liver infusion agar medium. A loopful of sterile rice starch was added to the culture tubes upon inoculation, and the whole work was performed under sterile conditions. Cultures were examined after 24 hours at 37° C., and in some instances after 48 hours. Sub-inoculations and isolation of colonies of protozoa were made only in exceptional cases.

Permanently Stained Preparations.—These were made in a few selected cases. The staining methods used were Heidenhain's iron haematoxylin and Mallory's phosphotungstic haematoxylin, as modified by one of us (W. C.) (see Hoare, 1949). Dry preparations were made of some flagellates from cultures, and these were stained by Leishman's and/or Giemsa's method.

Results of Direct Film and Concentration

Table I gives detailed results of the general one-stool examination in direct film and after concentration, cultivation, and staining of permanent preparations. Cysts of four species of amoebae and two species of flagellates were detected during this survey. No active forms either of amoebae or of flagellates were found. Of the 50 specimens

TABLE I.—*Protozoa found in Faecal Specimens from Mentally Deficient Children*

No.	Age in Years	Time in Hospital	Results			
			In Direct Film	Additional Findings		Total Findings
				After Concentration	After Cultivation	
1	8	3·3 years	Neg.	Neg.	Neg.	Neg.
2	14	8·6 ,,	E.c.	—	E.h. Ent.h.	E.c. E.h. Ent.h.
3	7	5·0 ,,	I.b. E.n. ?	E.n. E.c.	Ent.h.	I.b. E.n. E.c. Ent.h.
4	11	5·7 ,,	Neg.	Neg.	Ent.h.	Ent.h.
5	15	6·3 ,,	Neg.	Neg.	Neg.	Neg.
6	9	2 days	Neg.	Neg.	Neg.	Neg.
7	7	4·0 years	E.h. G.i. E.n. E.c.	I.b.	—	E.h. G.i. E.n. E.c. I.b.
8	5	45 days	E.c. E.h. Small cyst ?	I.b.	—	E.c. E.h. I.b.
9	12	8·1 years	Neg.	Neg.	Neg.	Neg.
10	7	1·4 ,,	E.c. ?	E.c.	—	E.c.
11	12	8·3 ,,	Neg.	Neg.	Neg.	Neg.
12	13	8·3 ,,	E.h. ?	E.h. I.b. E.c. C.m.	—	E.h. I.b. E.c. C.m.
13	16	13·8 ,,	I.b.	E.c. E.h.	—	I.b. E.c. E.h.
14	6	3·3 ,,	E.n.	E.c.	—	E.n. E.c.
15	6	3·3 ,,	Neg.	Neg.	Neg.	Neg.
16	7	2·3 ,,	E.c.	Not made	—	E.c.
17	11	3·8 ,,	Neg.	Neg.	Neg.	Neg.
18	13	8·4 ,,	Neg.	Neg.	Neg.	Neg.
19	12	7·7 ,,	G.i. E.c.	—	—	G.i. E.c.
20	9	8·2 ,,	Neg.	Neg.	Neg.	Neg.
21	8	6·1 ,,	Neg.	Neg.	Neg.	Neg.
22	9	3·4 ,,	G.i.	—	—	G.i.
23	12	7·8 ,,	G.i.	E.c. I.b.	Ent.h.	G.i. E.c. I.b. Ent.h.
24	17	13·8 ,,	Neg.	E.c.	—	E.c.
25	13	8·4 ,,	E.h. E.c.	—	—	E.h. E.c.
26	8	2·9 ,,	Neg.	Neg.	Neg.	Neg.
27	13	6·3 ,,	Neg.	Neg.	Neg.	Neg.
28	8	3·3 ,,	E.h. I.b.	E.c. C.m.	—	E.h. I.b. E.c. C.m.
29	9	6 months	Neg.	Neg.	Ent.h.	Ent.h.
30	12	7·9 years	Neg.	Neg.	Neg.	Neg.
31	10	7·8 ,,	E.c. G.i.	E.h.	—	E.c. G.i. E.h.
32	13	3·2 ,,	E.c.	—	Ent.h.	E.c. Ent.h.
33	8	3·3 ,,	E.n.	—	E.h.	E.n. E.h. G.i.*
34	13	4·3 ,,	E.c.	—	—	E.c.
35	7	3·1 ,,	Neg.	Neg.	Neg.	Neg.
36	5	11 months	E.h.	—	Ent.h.	E.h. Ent.h.
37	14	5·4 years	E.n. E.c.	—	—	E.n. E.c.
38	11	4·9 ,,	E.c.	—	Ent.h.	E.c. Ent.h.
39	12	5·9 ,,	Neg.	Neg.	Neg.	Neg.
40	10	4·6 ,,	E.n. E.h.	—	—	E.n. E.h.
41	8	5·7 ,,	E.c.	E.h.	—	E.c. E.h.
42	8	1·2 ,,	E.c.	E.n.	E.h.	E.c. E.n. E.h.
43	13	7·5 ,,	E.c. Small cyst ?	E.n.	—	E.c. E.n.
44	8	4·8 ,,	E.h. Small cyst ?	I.b. E.c.	—	E.h. I.b. E.c.
45	10	6·5 ,,	E.c. E.h.	I.b.	Ent.h.	E.c. E.h. I.b. Ent.h.
46	12	5·1 ,,	E.c.	C.m.	—	E.c. E.n.* C.m.
47	14	6·5 ,,	E.c.	—	—	E.c.
48	11	9·0 ,,	E.h.	E.c.	—	E.h. E.c.
49	14	6·7 ,,	E.c.	—	Ent.h.	E.c. Ent.h.
50	6	3·5 ,,	G.i. E.c.	E.m.	—	G.i. E.c. E.n.

* Revealed by Heidenhain's haematoxylin staining of a wet-fixed film.

E.c.=*Entamoeba coli.* E.h.=*E. histolytica.* E.n.=*Endolimax nana.* I.b.=*Iodamoeba butschlii.* G.i.=*Giardia intestinalis.* C.m.=*Chilomastix mesnili.* Ent.h.=*Enteromonas hominis.*

examined, 30 were positive for one or more species of protozoa in the direct film (60%). After concentration the number of positive specimens increased to 33 out of the 49 examined (67%). In no case did the direct examination reveal anything that the examination of the concentrated specimen did not, and often the latter technique changed a doubtful into a certain result.

Table I shows the following incidences: *E. coli*, 29 (58%); *E. histolytica*, 16 (31%); *E. nana*, 10 (20%); *I. butschlii*, 9 (18%); *G. intestinalis*, 7 (14%); *C. mesnili*, 3 (6%); *Ent. hominis*, 10 (20%).

The importance of the concentration technique is shown even more by the increased number of species of protozoa detected (Table II).

TABLE II

No. of Specimens Positive for	Direct Film	Concentration
1 species of protozoa	21	11
2 " " "	10	10
3 " " "	0	9
4 " " "	1	2
5 " " "	0	1
Average No. of species of protozoa per positive specimen	1·4	2·2

The relative efficiency of direct film examination, as compared with concentration, is given in Table III. (The figures in parentheses represent percentages of the first column when the figures of the third are taken as 100%.)

TABLE III.—*Number of Specimens in which Cysts were Detected*

	Direct Film	Concentration
E. coli	18 (64%)	28
E. histolytica	9 (60%)	15
E. nana	5 (50%)	10
I. butschlii	3 (33%)	9
G. intestinalis	6 (100%)	6
C. mesnili	0 (0)	3

Cultivation

(*a*) No. 33 (Table I) showed trophozoites of *E. histolytica* (not found before).

(*b*) Nos. 3, 4, 23, 29, 32, 36, 38, 45, and 49 showed active forms of small flagellates which could not be identified with certainty. In order to identify them in at least one instance, a culture of No. 2 in Dobell's HSre medium, showing small flagellates, was subinoculated in the same medium, and for some time, until the organisms were numerous enough to enable us to make permanent preparations. They were also examined under dark-ground illumination, and were eventually diagnosed as *Enteromonas hominis*.

(*c*) Nos. 2 and 42 showed, in addition to the "small" flagellates mentioned above, trophozoites of *E. histolytica*. No. 42 had been negative previously for this organism. It should be noted that Nos. 4 and 29, which were found negative when examined by other techniques, proved positive after cultivation, thus increasing the overall incidence of protozoa found during this survey to 70% of the specimens, and the proportion of specimens showing *E. histolytica* was raised by these cultural methods to 34%. *Blastocystis hominis* was a very common contaminant of the cultures.

Permanent Preparations

Permanently stained preparations were made of about one-fifth of the specimens obtained, using one or more of the staining methods mentioned. Only when examination was prolonged for over 30 minutes (under the 1/12 objective) was it possible to detect species of protozoa not found previously. Thus *G. intestinalis* cysts and *E. nana* cysts were added to the previous results of Nos. 33 and 46 respectively. The size of the *E. histolytica* cysts was not measured as a routine, but most seemed to be of the small variety (7 μ to 12 μ).

Discussion

This small survey did not pretend to find out the true incidence of infection of intestinal protozoa, which would have required the examination of repeated specimens. However, specimens from twelve children were examined twice, from two children three times, and from a further two children four times; three additional infections of *E. histolytica* were thereby discovered, bringing the apparent total incidence of this species to 40%. This figure is probably the highest recorded in the United Kingdom, where in persons who had never resided abroad it has varied from 1.6% (Morton *et al.*, cited by Hoare, 1950) to 10% (Dobell *et al.*, cited by Hoare, 1950). In a group of men of the R.A.F. previously stationed in India, some of whom had given a past history of dysentery, Rickards (1949) estimated a true incidence of from 21.99 to 36.65% (*E. histolytica*). High rates are usual in institutions for mental deficients, and even higher rates than the present ones were found by Tobie *et al.* (1951) in Wassaic State School, Wassaic, New York, U.S.A., where the following incidence (direct film and concentration combined) was determined: *E. coli*, 76%; *E. histolytica*, 59%; *E. nana*, 65%; *I. butschlii*, 61%; *G. intestinalis*, 38%; *C. mesnili*, 40%.

The importance of *E. histolytica* with respect to public health remains doubtful in the absence of clear knowledge of the pathogenicity of the species. It is suggested that the high incidence of this parasite (and others) in patients in mental institutions, as compared with that in the general population, is probably due to close contact between people with unhygienic personal habits.

Conclusions and Summary

A pilot survey for intestinal protozoa was carried out with faecal specimens from mentally deficient children in Harperbury Hospital, Shenley, Hertfordshire, during which, besides direct examination and cultivation, a new concentration technique was used.

The results of this survey showed a very high infection rate among these children, most of whom were found to harbour from one to as many as five different species of intestinal protozoa. The rate of infection with *E. histolytica* was found to be 40%, but it is believed that its incidence may be even higher.

A rare species of flagellate, *Enteromonas hominis*, was isolated in culture media from one specimen and maintained by subinoculation in Dobell's medium.

This work was done under the guidance and direction of Professor P. C. C. Garnham, Director of the Department of Protozoology, to whom we are indebted for the facilities provided for this investigation. We are also indebted to Dr. E. D. Taylor, medical superintendent, Harperbury Hospital, for the supply of specimens of faeces and epidemiological information on the mentally deficient children of his hospital.

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At the end of March this year there were 9,413 blind persons on the registers of the local authorities in Scotland, the highest figure ever recorded. The increase over last year of 294 people is accounted for almost entirely in the 70-years-and-over age group, which now comprises 44% of the total. The total number of children under 16 registered as blind was 184, 27 of whom were new registrations.

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HYPERCALCAEMIA AND IMPAIRMENT OF RENAL FUNCTION IN GENERALIZED SARCOIDOSIS

BY

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Patients with generalized sarcoidosis occasionally show evidence of impaired renal function. In most of the cases reported in the literature this has been associated with marked hypercalcaemia (van Creveld, 1941; Schüpbach and Wernly, 1943; Klinefelter and Salley, 1946; Westra and Visser, 1949; Longcope and Freiman, 1952). The pathological mechanisms underlying these disturbances remain obscure, and we have recently had an opportunity of studying a case with these two complications and of observing the effect on them of cortisone therapy.

Case Report

A married man aged 23 was first seen in July, 1950. He complained of vague dyspepsia, which he had had for three months, and also admitted to the loss of 16 lb. (7.3 kg.) in weight and to nocturia up to four times a night. The only abnormality noted on physical examination was a moderately enlarged gland in the right axilla. The chest *x*-ray film showed bilateral hilar gland enlargement and miliary mottling in the lung fields. He was admitted to hospital and various investigations were carried out. No tubercle bacilli were found in the sputum, urine, or gastric contents. The Mantoux test was negative at 1/100. The urine contained a few pus cells and hyaline casts, the concentration–dilution range was 1010 to 1006, and the maximum urea concentration was 1.49 g. per 100 ml. The blood urea was 60 mg. per 100 ml. and the urea clearance (C_m) 65% of average normal. An intravenous pyelogram showed no abnormality. The plasma albumin was 3.8 g. per 100 ml., globulin 2.5 g. per 100 ml.; the serum flocculation tests were positive; and the E.S.R. was 58 mm. in one hour (200 mm.). A diagnosis of pulmonary sarcoidosis was made and the patient was discharged to out-patient supervision.

In June, 1951, he started to get attacks of pain in his right loin; these became increasingly severe, and from April, 1952, were accompanied by haematuria. He was readmitted to hospital for further study. Physical examination revealed a few enlarged glands in the right axilla, and there was early calcification of the corneal limbus of both eyes. The chest *x*-ray film still showed enlarged hilar glands and further mottling of the lung fields. A straight *x*-ray film of the abdomen showed a "mulberry calculus" in the right renal area; *x*-ray films of the skeleton were normal. The urine contained numerous pus and red blood cells, and was sterile on culture; the concentration–dilution range was 1010 to 1008, and the maximum urea concentration 1.4 g. per 100 ml. The blood urea was 60 mg. per 100 ml. and the urea clearance (C) 47%. The E.S.R. was 46 mm. in one hour (100 mm.). The plasma albumin was 3.5 g. and the globulin 4.6 g. per 100 ml.; the electrophoretic pattern showed an increase of γ-globulin. The serum calcium was 14.3 mg. per 100 ml., plasma inorganic phosphorus 4.2 mg. per 100 ml., and serum alkaline phosphatase 11.1 (K.–A.) units per 100 ml. The urinary calcium output was 350 mg. in 24 hours on an ordinary ward diet containing about 1 g. of calcium. Estimations of serum and C.S.F. calcium were performed on specimens obtained nearly simultaneously; the serum contained 13.8 mg. and the C.S.F. 5.1 mg. per 100 ml. The Mantoux test was negative at 1/100. Biopsy of a gland in the right axilla showed the typical appearance of sarcoidosis.

It was decided to study the effect of cortisone on the radiological appearance of the lung fields and on the calcium metabolism and serum proteins. In view of the relationship between sarcoidosis and tuberculosis and of the danger of activating tuberculous lesions with cortisone, it was also decided to give streptomycin during this period. Preliminary determinations of the blood streptomycin levels after various doses were made in view of the impaired renal function. The dose chosen was 1 g. of streptomycin a day. This was started on May 10 and continued until July 13, periodic blood-level determinations being made during this time. After a preliminary nine-day period on a low-calcium diet (170 mg. a day) cortisone, 150 mg. daily in six-hourly doses by mouth, was started on May 11. During the preliminary period on the low-calcium diet the serum and

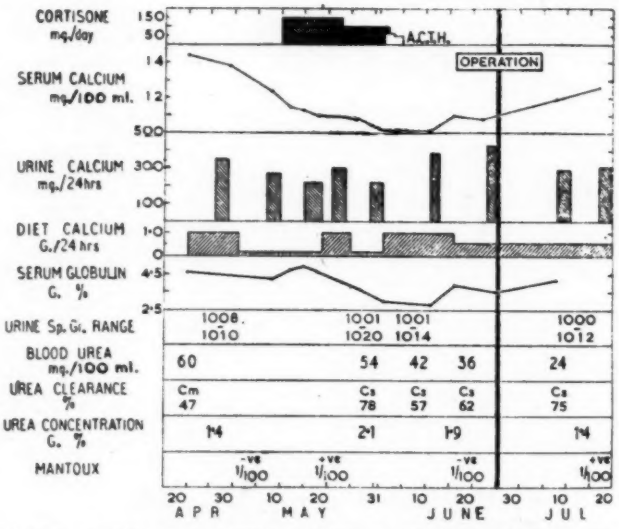

Chart of the case, showing effect of cortisone therapy and variation of dietary calcium on serum and urinary calcium, serum globulin, and renal function.

urinary calcium fell. Reduction of the serum level continued while the patient was on cortisone, despite an increase of the dietary calcium after 10 days. The lowest figure obtained was 10.1 mg. per 100 ml. The urine calcium also fell further when the patient was first given cortisone with a low-calcium diet, but there was a slight temporary increase when the calcium intake was raised. The plasma inorganic phosphorus fell to 2.2 mg. per 100 ml. The alkaline phosphatase was unchanged. There was some reduction of the serum globulin, an improvement in renal function, and the Mantoux test became positive (Pyke and Scadding, 1952). (These changes are shown in the Chart.) The sedimentation rate showed no significant change. The course of cortisone was continued for 23 days and all diets given during this period had a low-sodium content.

X-ray examinations of the chest during the treatment showed steady improvement, and by the end of the course there had been marked clearing, which has persisted (August, 1952).

Surgical opinion advised exploration of the kidney and removal of the stone, and this was done on June 26 by Mr. D. R. Davies. The stone was found to be almost pure calcium oxalate. A renal biopsy performed during the operation showed evidence of very mild chronic pyelonephritis but no characteristic sarcoid lesions or evidence of calcification.

The patient's recovery from operation was uneventful, but subsequently he started to get pain in the left side; the serum calcium level had risen to 12.6 mg. per 100 ml. before

his discharge from hospital and his urinary calcium output remained over 300 mg. per 24 hours despite moderate restriction of the calcium intake.

Discussion

This patient had "band keratitis" and a renal calculus, clinical manifestations of hypercalcaemia and of hypercalciuria respectively. Calculi, almost always of calcium oxalate, have occasionally been reported in patients with generalized sarcoidosis (van Creveld, 1951; Albright and Reifenstein, 1948; Longcope and Freiman, 1952), and corneal calcification is apparently equally rare (Haldimann, 1941; Cogan *et al.*, 1948). The origin of hypercalcaemia has not been satisfactorily explained, although three suggestions have been put forward: that it is due to the disturbance of plasma protein; that it is a manifestation of parathyroid overactivity; or that it results from bone destruction by sarcoid deposits. It is unlikely that the extra calcium is bound to the additional globulin, because the serum calcium and globulin levels (as determined by the present crude methods) do not vary in parallel (Harrell and Fisher, 1939; van Creveld, 1941; Albright and Reifenstein, 1948). Under normal circumstances albumin and not globulin is the protein chiefly concerned in calcium binding (Gutman and Gutman, 1937), and if the extra calcium were all bound to protein hypercalciuria should not occur. Parathyroid hyperplasia has been found in some cases of sarcoidosis with hypercalcaemia (Westra and Visser, 1949; Longcope and Freiman, 1952), but in others exploration has shown the glands to be normal (Albright and Reifenstein, 1948; C. E. Dent (unpublished observation). No case has been reported with a low plasma inorganic phosphorus level, and this also makes it unlikely that there is primary parathyroid overactivity.

The most probable explanation of the hypercalcaemia is that it is due to active destruction of bone from widespread involvement by sarcoid deposits. This would be comparable to that found in some cases of myelomatosis. Radiological changes in the bones in sarcoidosis are usually confined to the hands, and generalized bone rarefaction is rare, although van Creveld (1941) and Schüpbach and Wernly (1943) have reported cases in which it was present. Radiological evidence of generalized rarefaction is found only when there has been a negative calcium balance for many years, and sarcoidosis is a self-limited process in which hypercalcaemia has seldom persisted for any considerable time (Longcope and Freiman, 1952). The absence of *x*-ray evidence of rarefaction in most cases does not therefore exclude active bone destruction as the cause of the hypercalcaemia. More direct evidence is provided by the histological studies of Schaumann (1926), who demonstrated widespread osseous lesions and thinning of the bony trabeculae without any radiological changes.

The effect of variation of calcium intake on the serum calcium concentration and urinary output has seldom been reported. Albright and Reifenstein (1948) found little change in the urinary calcium with intakes varying from 360 to 2,967 mg. a day. In our patient the serum level and urinary output of calcium fell slightly when he was placed on a diet containing much less calcium (170 mg. a day), although the urinary output remained abnormally large. Klinefelter and Salley (1946) also reported a slight fall in serum and urinary calcium on a low-calcium diet. The fact that the urine calcium remained fairly high when the intake was only 170 mg., together with the histological evidence of Schaumann, suggests that the hypercalcaemia results from osseous sarcoidosis and rapid bone destruction. The further reduction of serum and urinary calcium following cortisone therapy would be consistent with this hypothesis. There was radiological evidence of improvement in the lung condition while cortisone was being given, and it is probable that the bone lesions, if any, were similarly affected.

Impairment of renal function is a rare finding in cases of sarcoidosis; in only two has a post-mortem examination been reported, and little is known about its causation. It cannot be correlated with the severity of the sarcoid process in the kidney, but seems to have some association with hypercalcaemia. Longcope and Freiman (1952) reported a case in which the patient died of renal failure and the kidneys showed chronic pyelonephritis and tubular calcification. In another patient, dying of miliary tuberculosis, sarcoid lesions, miliary tubercles, and calcified tubules were found in the kidneys (Horton *et al.*, 1939). Our studies clearly indicate the reversibility of the renal function impairment and its lack of association with any permanent structural damage to the kidney. Reversible impairment of renal function is known to result from a number of biochemical disturbances, of which hypercalcaemia is one. Long-continued elevation of the serum calcium leads to permanent renal damage with tubular calcification and hyalinization of the glomeruli; transient hypercalcaemia, on the other hand, leads to a temporary impairment. The improvement in renal function in the patient reported here was more rapid than is usual, for example, after vitamin-D overdosage. The renal biopsy performed a few weeks after the serum calcium fell to normal showed no evidence of calcification, but, in view of the report by Bjørnboe and others (1952) of the disappearance of tubular calcification within three weeks of discontinuing treatment in a case of vitamin-D intoxication, this does not exclude the presence of tubular calcification before the cortisone administration, and there is always the possibility that the renal biopsy may not have been typical of the whole kidney.

Hypercalcaemia in sarcoidosis is of importance for three reasons. First, it may lead to impairment of renal function, which, however, rarely progresses to uraemia; secondly, calcium oxalate stones may form in the renal pelvis; and, thirdly, if it occurs in the absence of *x*-ray changes in the lungs or of hyperglobulinaemia it may be attributed to hyperparathyroidism and lead to an unnecessary neck exploration. Renal calculi and band keratitis with hypercalcaemia, hypercalciuria even on a low calcium intake, normal bone *x*-ray films, and a normal serum phosphatase may be found in "hyperparathyroidism without bone disease." In this condition the plasma inorganic phosphorus is usually reduced, but it may be normal if there is impairment of renal function—that is, in Albright and Reifenstein's (1948) "hyperparathyroidism - without bone disease - with renal-failure." The differential diagnosis can therefore be very difficult. Howard *et al.* (1949) have reported that in sarcoid with hypercalcaemia the C.S.F. calcium is elevated, whereas in hyperparathyroidism it is normal. The C.S.F. calcium estimations in our patient were performed in duplicate in two laboratories and do not support this claim, but our studies do suggest the possible value of cortisone in differentiating between the two conditions, though we have not yet had an opportunity of investigating the effect of this hormone on the serum calcium level in a case of hyperparathyroidism. A similiar reduction in serum calcium concentration in a case of sarcoidosis treated with cortisone has been observed by Professor G. M. Bull (personal communication).

Summary

Hypercalcaemia and impairment of renal function may occur in generalized sarcoidosis. A case is described in which the effects of variation of dietary calcium and cortisone therapy were studied. Clinical, radiological, and biochemical improvement followed the administration of cortisone. There was reduction of serum calcium and serum globulin, and renal function was much improved.

It is suggested that hypercalcaemia and hypercalciuria result from active bone destruction due to generalized sarcoidosis, and that in some cases the impairment of renal function is a consequence of the continuing disturbance of calcium metabolism.

A renal biopsy performed after cortisone therapy showed no sarcoid deposits or tubular calcification.

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The differentiation of sarcoidosis with hypercalcaemia from hyperparathyroidism is discussed.

We wish to thank Miss D. P. Tuck for the preparation of the special diets; Mr. V. K. Asta for the chart; and the Medical Research Council for the cortisone used in this study.

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Addendum.—Since this report was prepared we have had another opportunity of studying the patient under constant normal dietary intake of calcium with and without cortisone. This time no change in serum proteins was observed, but again the cortisone reduced the serum calcium level to normal, improved renal function, and greatly improved the patient's well-being. This has now been repeated on three other patients with similar results. It appears that the improvement can be maintained for some months at least on a reduced dose of cortisone. It is hoped to publish these results later when a longer follow-up has been obtained. A recent paper by Shulman, Schoenrich, and Harvey (*Bull. Johns Hopk. Hosp.*, 1952, **91**, 371) on the general effects of cortisone on patients with sarcoidosis briefly mentions changes in calcium levels and in renal function which are very similar to those we have described above.

SPLENIC VENOGRAPHY

BY

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Great interest has lately been taken in the surgical treatment of cirrhosis of the liver (Berman *et al.*, 1951; Reinhoff, 1951; Leger *et al.*, 1952; Hunt, 1952) and portal hypertension (Whipple, 1945; Blakemore and Lord, 1945; Blakemore, 1951; Walker, 1952; Hunt, 1952). Valuable information may be obtained by needle biopsy of the liver in cases of hepatic cirrhosis. The procedure is sometimes difficult owing to the hardness and smallness of the liver and to the presence of ascites. Portal hypertension is usually determined by noting the pressure in one of the tributaries of the portal vein. Cavernomatous changes in the portal vein and obstruction in its prehepatic part or in the splenic vein may be made out by injecting a radio-opaque dye in the tributaries. In all these cases the abdomen has to be opened to carry out the investigation. Moreover, a surgeon must be sure that the splenic vein is patent and that the veins are large enough before attempting spleno-renal anastomosis. If useful information could be obtained without laparotomy by a procedure which is safe it would be welcome. Splenic venography was done by Dreyer and Budtz-Olsen (1952) in 11 cases without any untoward incident. They suggested, among other things, that the method might be useful in finding out the site of block in cases of portal hypertension.

We carried out splenic venography in two control cases, in two with portal hypertension, in three cases with cirrhosis of the liver, and in seven cases of splenomegaly of unknown aetiology.

Method

The patients fasted overnight. Half an hour before the procedure 50 mg. of pethidine hydrochloride was injected. The patients lay supine on the *x*-ray table. The left ninth intercostal space in the mid-axillary line was chosen as the

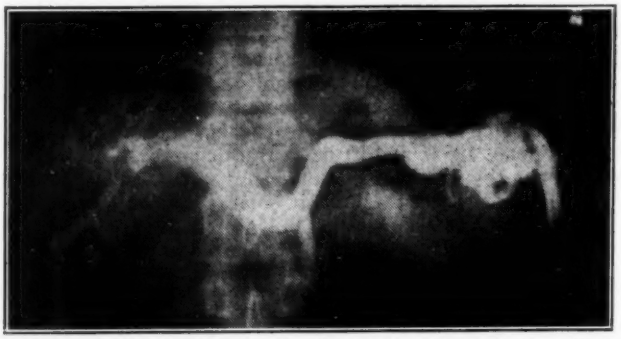

Fig. 1.—Splenic venogram showing iodoxyl in spleen, splenic vein, upper part of a superior mesenteric vein, portal vein, and intrahepatic branches of portal vein.

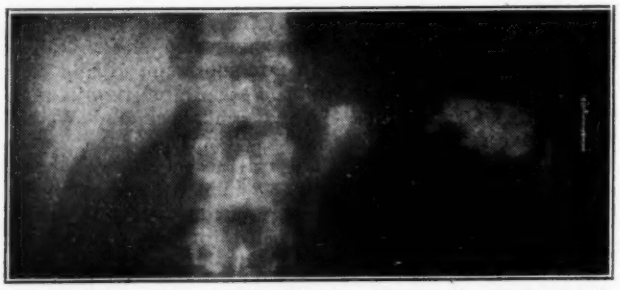

Fig. 2.—Most of the dye has left the spleen and accumulated in the right lobe of the liver.

site for injection of the radio-opaque dye. The part was sterilized and the space up to the splenic capsule was anaesthetized with 2% procaine hydrochloride solution. About 5 ml. was needed. Then 20 ml. of a solution of "iodoxyl" (N-methyl-3:5-di-iodo-4-pyridone-2:6-dicarboxylic acid) was taken into a 20-ml. Record syringe to which a lumbar puncture needle was attached. It was pushed in medially and slightly downwards. The engagement of the needle in the spleen could be felt. The patients were asked to hold their breath at the end of inspiration until the whole amount was injected. An assistant held the lower pole of the spleen in cases in which it was enlarged.

The dye was injected as quickly as possible and a picture was taken when 15 ml. of dye had been injected (Fig. 1). That amount took about five seconds to inject. The next picture was taken five seconds later, when the full amount of the dye had been injected (Fig. 2). The needle was taken out and the site was sealed. At first we used a fine lumbar-puncture needle (children's size) attached to a 20-ml. all-glass syringe. It required great force to inject the dye into the splenic pulp. Later on, an adult lumbar-puncture needle attached to a Record syringe was used, when it became easy to inject the dye in five seconds. If the spleen was enlarged the needle was pushed for about 5 cm. from the skin surface. In cases without splenic enlargement this

distance varied between 3 and 4 cm., depending on the thickness of the parietes. The patients were kept in bed for 24 hours and the pulse, respiration, and temperature were noted every hour. Sensitivity to iodine was not tested.

Reactions

If we exclude the first patient, who neither fasted nor had a sedative before the injection of the dye, there were practically no untoward reactions. Most of the patients complained of some pain over the spleen which lasted for about 10 minutes. There was no obvious alteration in pulse, respiration, and temperature. To note the amount of bleeding we drew out ascitic fluid in two cases of cirrhosis of liver before and after venography. In both cases only the second specimen contained blood. The patients were up and about from the next day and took their usual diet. The first patient vomited immediately after the injection of the dye, had a rigor, and was febrile for several days. He is now quite well. The cases are summarized in the Table.

Discussion

In a normal splenic venogram the splenic vein and the portal vein and its branches for some distance inside the liver are visible. A small portion of the superior mesenteric vein near its entry into the splenic vein may sometimes be made out (Fig. 1). The dye leaves the spleen very rapidly (Fig. 2). A small remnant may, however, be seen inside the spleen even an hour after the investigation. It usually appears in the urinary bladder within 30 minutes of the injection of the dye. In cases of obstruction of the splenic vein the portion of the vein beyond the obstruction will not appear, as shown by Dreyer and Budtz-Olsen (1952). In portal hypertension due to greatly increased pressure in the portal circulation the blood flow may be reversed and the dye may enter the inferior mesenteric vein, its tributaries, and the left gastric vein (Fig. 3).

In cirrhosis of the liver, as the obstruction to the portal vein is inside the liver, the intrahepatic branches of the vein are either not made out or faintly seen, depending on the degree of obstruction, and the extrahepatic portal vein and the splenic vein become markedly dilated and tortuous (Fig. 4). The inferior mesenteric and left gastric veins may not be demonstrated unless the portal hypertension is great. Hence the degree of prominence and tortuosity of these veins in the splenic venogram will be a measure of the extent of portal hypertension. Case 5, who was admitted to hospital for operative treatment of cirrhosis of the liver, had a contracted liver with a granular surface. The portal pressure was 300 mm. of saline, and immediately after ligation of the hepatic and splenic arteries it fell to 225 mm. There was no injury to the spleen due to venography.

FIG. 3.—Tortuous splenic and inferior mesenteric veins. Extrahepatic portion of portal vein and left gastric vein can be seen.

In our cases of splenomegaly of unknown aetiology there was no clinical evidence of portal hypertension, the liver-function tests were within normal limits, and liver biopsy did not show cirrhotic changes. Owing to the huge splenic enlargement the splenic vein has to carry a large amount of blood and becomes dilated and tortuous. The portal vein and its intrahepatic branches also become dilated. In these cases the dye will be poorly concentrated, and the venogram will show dilatation and tortuosity of the splenic and portal

Summary of Cases

Case No.	Age and Sex	History of Bleeding	Veins over Abdominal Wall	Venous hum.	Spleen	Liver	Ascites	Liver-function Tests	Liver Biopsy	Clinical Diagnosis	Splenic Venogram
1	24 M	–	—	–	N.P.	N.P.	–	Normal	Not done	Neurosis	Showed splenic vein, part of superior mesenteric vein, and portal vein with its intrahepatic branches (Fig. 1)
2	20 M	–	—	–	1 F.	1 F.	–	,,	,, ,,	Tuberculous cervical lymphadenitis with chronic malaria	Same as above. Superior mesenteric vein not shown
3	12 M	Haematemesis	+	+	3 F.	2 F.	–	,,	Slight fatty changes in peripheral part of lobules	Splenomegaly with portal hypertension	Tortuous splenic vein, prominent and tortuous inf. mesenteric vein extending up to pelvis with its tributaries, left gastric vein, and portal vein before its entry into liver (Fig. 3)
4	26 M	Haematemesis and melaena	+++	++	4 F.	–	–	Abnormal	Not done	,, ,,	Dilated and tortuous splenic and portal veins. Inf. mesenteric vein shown faintly
5	50 M	–	+	–	2 F.	–	+++	,,	Marked cirrhotic changes	Portal cirrhosis	Very dilated splenic and portal veins. Intrahepatic branches of portal vein not shown (Fig. 4)
6	24 M	Haematemesis	+	–	2 F.	–	+++	,,	Not done	,, ,,	,, ,,
7	35 M	–	+	–	3 F.	1 F.	++	,,	,, ,,	,, ,,	,, ,,
8	42 M	–	–	–	Symphysis pubis	3 F.	–	Within normal limits	Slight fatty changes	Splenomegaly of unknown aetiology	Marked dilatation and tortuosity of splenic and portal veins. Intrahepatic branches faintly shown (Fig. 5)
9	25 M	–	–	–	Left iliac fossa	3 F.	–	,,	Focal areas of early fibrosis	,, ,,	,, ,,
10	35 F	–	–	–	2 F below umbilicus	2 F.	–	,,	Slight fatty changes	,, ,,	,, ,,
11	26 M	–	–	–	4 F.	2 F.	–	,,	,,	,, ,,	,, ,,
12	22 M	–	–	–	Umbilicus	2 F.	–	,,	Not done	,, ,,	,, ,,
13	23 M	–	–	–	Left iliac fossa	3 F.	–	,,	,,	,, ,,	,, ,,
14	22 M	–	–	–	Umbilicus	3 F.	–	,,	No abnormality	,, ,,	Very faintly outlined splenic and portal veins

– Absent. + Slight. ++ Moderate. +++ Marked. N.P. Not palpable. F. Finger below costal arch.

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veins (Fig. 5). As there are no cirrhotic changes, the intrahepatic branches of the portal vein can be made out, though faintly owing to dilution of the dye. Inferior mesenteric and gastric veins are not seen, as there is no associated portal hypertension. In Case 14, who underwent splenectomy, the portal venous pressure was 120 mm. of saline. Often some of the dye gets underneath the capsule of the spleen, probably owing to adhesions between the spleen and the parietal wall; but in the case of splenomegaly in which splenectomy was done no such adhesions were found. In this case also no injury was noted in the spleen due to venography.

In experienced hands splenic venography is usually safe. Rarely the dye may produce vomiting and rigor, as is sometimes seen when carrying out intravenous pyelography.

Fig. 4.—Markedly dilated splenic vein. Extrahepatic portion of portal vein faintly seen, but the intrahepatic branches are not visible.

Fig. 5.—Tortuous and dilated splenic and portal veins. The intrahepatic branches are dilated and the dye is poorly concentrated in them.

Overnight fasting and the use of pethidine hydrochloride usually prevent these complications. Though pethidine quiets the patient and removes his apprehensiveness, he remains co-operative and holds his breath during injection of the dye. There is some bleeding due to puncture of the spleen, which, however, stops spontaneously. The needle should be pushed for some distance inside the spleen and the dye injected into the splenic pulp. There is far less chance of rupture of the spleen than when the dye is forcibly pushed immediately underneath the capsule. The possibility of excessive bleeding and of rupture of the spleen, though very remote, should be kept in mind, and the procedure carried out only in a hospital where emergency splenectomy could be done.

Most of the patients complained of pain over the spleen immediately after injection of the dye. It lasted from five to ten minutes. It is probably due to spasmodic contraction of the spleen, set up by the large amount of foreign substance inside the splenic pulp. If there is associated spasm of the splenic vein the dye is retained longer inside the spleen.

Summary

Splenic venography was done on 14 cases without untoward incidents.

Though there is slight haemorrhage from the spleen the procedure is safe.

The venogram shows the size and patency of the splenic and portal veins.

The intrahepatic branches of the portal vein are visible in a normal venogram, but, depending on the degree of obstruction, they are either absent or are faintly made out in venograms of cases of cirrhosis of the liver.

In portal hypertension the inferior mesenteric and left gastric veins may become visible and their prominence and tortuosity may be a measure of the degree of hypertension.

In splenomegaly without portal hypertension or cirrhotic changes in the liver the splenic and portal veins are dilated and tortuous and are fainter in outline than in normal cases. In these patients and in cases of cirrhosis of the liver the splenic and portal veins are sometimes so dilated as to resemble a loop of intestine (see Fig. 4).

Addendum.—Since the submission of the paper for publication we have carried out splenic venography on four cases of cirrhosis of the liver, two of nutritional oedema, and three of splenomegaly of unknown aetiology without any untoward incident. The conclusions drawn in the paper have been corroborated.

We are much indebted to Dr. A. K. Dutta Gupta, Principal-Superintendent, Nilratan Sarkar Medical College, for giving us the facilities for carrying out this investigation. Our thanks are also due to Dr. S. Mitra, the Registrar, and Drs. M. Gupta, G. Chanda, and G. Melhotra, the house officers to the associate professor of medicine, and to Drs. M. Mukherjee and R. Roychoudhary, the radiologist and assistant radiologist respectively of the Nilratan Sarkar Medical College Hospital, for their help and co-operation.

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On Thursday last a plaque was unveiled on the wall of an old people's home in the King's Road, Chelsea, to commemorate the association of Sir Hans Sloane with the district. Sloane was born in Ireland in 1660. He studied medicine in Paris and Montpellier and graduated at Orange in 1683. He became a fashionable London doctor and a Fellow of the College of Physicians and of the Royal Society. In 1687 he sailed to Jamaica as physician to the Duke of Albemarle. From there he brought back a large number of plants and animals which formed the basis of his famous collection of specimens and books. As a physician he was as well known for his charity as for his professional skill, and devoted part of his salary to establishing a dispensary for the poor. He was elected secretary and later President of the Royal Society, and in 1716 he was made a baronet. He did not live permanently in Chelsea until 1742, but it was there that he died in 1753. In his will he left his famous collections to the nation, and they were housed in a building on the site now occupied by the British Museum.

Medical Memoranda

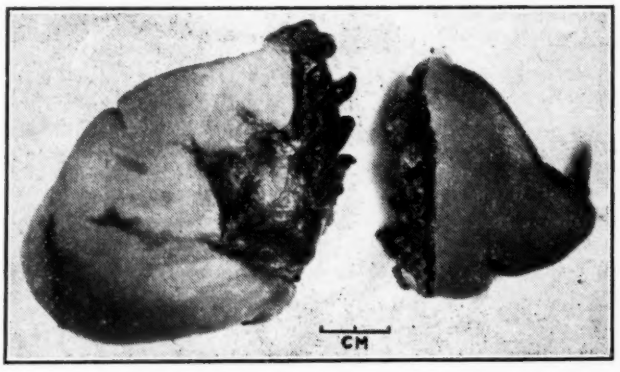
Unusual Case of Rupture of Spleen

The following case of traumatic rupture of the spleen was treated recently at Cardiff Royal Infirmary.

Case Report

The patient, a lusty young miner aged 28, was admitted on a Saturday evening complaining of upper abdominal pain and of dyspnoea. Twenty-four hours before admission he had been knocked down by a cyclist. When the accident happened he had just left a public-house where he had drunk "about ten pints" (5.7 litres) of beer. He had not been concussed but was unable to remember on which part of his body he had been hit. He had immediately got up, exchanged suitable imprecations with the cyclist, and had then walked four miles (6.4 km.) to his home. He had gone to bed and had been woken from sleep by upper abdominal pain which interfered with his breathing. This had persisted up to the time of his admission to hospital.

On examination the most striking finding was a respiration rate of 40 a minute with the alae nasi moving vigorously. There was no cyanosis, pallor, or sweating. The pulse rate was 92 and the blood pressure 130/80. The skin was warm even on the extremities and the skin circulation was brisk. The abdominal wall did not move freely on respiration and there was muscle guarding and tenderness to deep palpation all over the abdomen. Marked tenderness, muscle rigidity, and persistent dullness to percussion were present in the left upper abdominal quadrant. Left shoulder pain was absent, nor was it produced by raising the foot of the bed for 10 minutes with the patient lying flat, after the manner suggested by O'Connell (1951). A diagnosis was made of incomplete rupture of the spleen.



An hour or so after admission the abdomen was opened by an upper left paramedian incision. The peritoneal cavity contained a quantity, estimated at 1 to 2 pints (570 to 1,140 ml.), of fluid blood and some clots. On retracting the left edge of the wound the lower pole of the completely ruptured spleen (see photograph) was seen lying quite free and unattached on the front of the greater omentum. It was simply picked out of the abdomen. The main mass of the spleen was lying in its normal position with the hilar vessels intact. The surface of rupture was covered by clot, and at the time of operation haemorrhage from this surface was certainly not brisk. Splenectomy was completed without difficulty and the patient made an uneventful recovery. Two pints (1,140 ml.) of blood was transfused during and immediately after operation. Histological examination of the spleen revealed no abnormality.

Comment

That rupture of the spleen not uncommonly presents in a clinically covert manner is, of course, well known. The pathological explanation is that haemorrhage is arrested or retarded by blood clot. Conditions favourable to the formation of a localized clot, such as tearing of a small hilar vessel or partial or subcapsular rupture of the spleen, are generally present. The interest of the case reported lies in the fact that the same mechanism was effective in retarding haemorrhage in a patient whose spleen had suffered injury severe enough to amputate and to dislocate its lower pole.

I am indebted to Mr. J. B. Haycraft for permission to publish this case history.

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Rupture of Spleen in Infectious Mononucleosis

Spontaneous rupture of the spleen is rare except in districts infested with malaria. Among recorded diseases associated with spontaneous rupture are arteriosclerosis, arterial degeneration, sarcoidosis, lymphatic leukaemia, and glandular fever or infectious mononucleosis.

In the records of the United States Army Institute of Pathology infectious mononucleosis accounts for 7 out of 44 cases of spontaneous rupture of the spleen, and is second in frequency to malaria, which was responsible for 22.

Case Report

A man aged 23 was seen on February 6, 1952, as an acute abdominal emergency of 24 hours' duration. He complained of upper abdominal pain of a continuous nature since 5 a.m. on the previous day. The pain was felt in the left hypochondrium and the epigastrium, and there had been some distension in this region. Vomiting had not occurred, but he had had several attacks of nausea on the previous day. There was no history of trauma. He had not eaten a meal for over a week. His bowels were normal up till the previous day, when an attack of diarrhoea occurred. His urine was "strong," but otherwise normal. He had no cough and no backache. For the past two months he had been off-colour and claimed to have lost 28 lb. (12.7 kg.) in weight during this time. Seven days ago he had had a quinsy which had cleared up on sulphathiazole, 1 g. four-hourly for five days. Two days ago he had an attack of severe abdominal pain which doubled him up and lasted 15 minutes. Pain also occurred in the left supraclavicular region for a short period. There was no other significant past history.

On examination the patient was seen to be pale and a little wasted. His temperature was 100.6° F. (38.1° C.), pulse 100, respirations 28, blood pressure 145/90. The throat showed slight inflammation, but no peritonsillar abscess or membrane. The abdomen was distended, especially in the upper part; no visible peristalsis. On palpation there was slight tenderness and guarding all over. No masses were palpable. The spleen was not palpable. On percussion the abdomen was tympanitic, except that on percussing along a line from the left axilla to the umbilicus there was a band of dullness 2 in. (5 cm.) wide just above the costal margin. It was continuous with cardiac dullness medially, and faded away laterally. On auscultation there was complete silence in the abdomen. Per rectum definite tenderness was found in the rectovesical pouch. Routine palpation in the axilla, groin, and neck revealed a few lymph nodes that were hardly worthy of attention and were indistinguishable from old septic glands. The chest and heart were normal. On the physical signs a diagnosis of "blood in the peritoneal cavity ? cause" was made.

Laparotomy was performed under gas, oxygen, and ether (Dr. Roberts). A right paramedian incision was made. As soon as the peritoneum was incised blood welled out. On exploring the abdomen the spleen was found to have two tears on its convex surface, surrounded by a large volume of blood clot. The incision was extended with a left transverse cut dividing the right rectus muscle, and splenectomy performed. All blood was removed from the abdomen. No other abnormality was detected. The abdomen was closed without drainage.

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After operation a routine blood count showed: red cells, 3,050,000; Hb, 64% (8.2 g.%); colour index, 1.08; white cells, 22,000 (N. polymorphonuclears 47%, lymphocytes 39.5%, monocytes 13%, N. metamyelocytes 0.8%); one normoblast seen in counting 200 white cells; anisocytosis; platelets normal in number; many atypical lymphocytes present; ? glandular fever. A review of the case was then made and glandular fever seemed to be the correct diagnosis.

The Paul–Bunnell test showed:—first post-operative day: patient 1 in 24, control nil; seventh post-operative day: patient 1 in 96, control nil; fourteenth post-operative day: patient 1 in 24, control nil.

The patient was given aureomycin, 2 g. at once, and 0.5 g. six-hourly for four days. He made a satisfactory convalescence, and was discharged home on the sixteenth day in good health, when the white-cell count had fallen to 11,300 (N. polymorphonuclears 41%, eosinophils 6%, lymphocytes 43%, monocytes 10%).

The following pathological report on the ruptured spleen was received. "*Microscopical Report*:—Spleen (18 by 10 by 4.5–6.5 cm.; 580 g.). There was a large double cruciate tear on the medial surface (upper pole). Capsule entirely stripped from convexity of spleen ? following subcapsular haemorrhage. Pulp semi-fluid due to autolysis resulting from the usual failure of fixative to penetrate splenic tissue in bulk. (The peripheral 0.5 cm. of pulp was well fixed.)" "*Provisional Histological Report*:—The splenic pulp is unusually cellular. Most of the cells are mononuclears, including lymphocytes, lymphoblasts, and atypical larger cells. Plasma cells are present. There is an unusual proportion of polymorphs in the pulp. Some sinuses are distended with atypical mononuclears. Similar cells have infiltrated the capsule to a slight extent. There is a fresh subcapsular haemorrhage. The follicles are small and widely spaced, germinal centres are practically absent. Spleen: rupture (infectious mononucleosis)."

When seen 12 weeks after discharge the patient was quite well and the white blood cells numbered 8,400 per c.mm. (monocytes 10%). Many of the lymphocytes were atypical.

Comment

In 1922, before infectious mononucleosis as a separate clinical entity was recognized, Friesleben described spontaneous rupture of a spleen in a patient who was probably suffering from this disease. Since then a number of cases have appeared in the literature (King, 1941; Ziegler, 1944; Davis *et al.*, 1945; and Smith and Custer, 1946).

Usually some history of minor trauma prior to the rupture is obtained. It may be straining at defaecation, twisting in bed, or a definite slight blow. Signs of rupture may follow at once or appear in a few days, either suddenly or after symptoms suggesting intermittent bleeding. Rupture mostly occurs after the fourteenth day of the disease, suggesting that the changes in the spleen require this time to produce enough fragility in the organ for spontaneous rupture to occur. Ziegler described one fatal case, and four of Smith and Custer's seven patients died.

Histology.—The capsule is infiltrated with lymphocytes and large mononuclear cells, and there is oedema of the capsule and the subjacent pulp. The trabeculae are infiltrated with mononuclear cells to a greater degree than the capsule. A varying degree of dissolution of the trabeculae is present. Splenic pulp is increased in bulk and the pattern is blurred. The blood sinuses contain mononuclears which are often densely packed. Follicles are few per unit area, are small, and lack germinal centres. The histological pattern is thus typical enough to enable a diagnosis to be made.

I am indebted to Mr. B. T. Rose for permission to publish this case.

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Resident Surgical Officer and Surgical Registrar, General Hospital, Birmingham.

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Pregnancy following Haematosalpinx

Pregnancy following haematocolpos and haematosalpinx is rare enough to justify recording the following case.

Case Report

The patient was referred to Mr. V. B. Green-Armytage at the age of 17, after she had had a year of monthly pain, which was thought to be due to the delayed onset of menstruation. Mr. Green-Armytage, who has kindly supplied details which he has allowed me to record, states: "When seen, she had a typical haematocolpos and haematometra together with right and left iliac fossa pain suggesting overflow into the tubes. So the abdomen was opened. She had a bilateral haematosalpinx, and the distended uterus was sitting on the top of a mountain of haematocolpos. An assistant incised the anatomical vaginal defect and then I slowly milked the blood in the tubes into the uterus and away it went. There was just over one and a half pints of fluid (750 ml.), and I was interested to find on either side that a certain amount of the retained blood in the tubes was able to leak out of their fimbrial ends into the peritoneal cavity. Later I confirmed the patency of the tubes with carbon dioxide insufflation and salpingogram, and was able to give a good prognosis when she married."

Another gynaecologist who was present at the operation writes: "I well remember the haematocolpos, haematometra, and haematosalpinx which had further become haematoperitoneum. Vividly I recall the mahogany staining of the great omentum at laparotomy."

The patient was married in December, 1948, and became pregnant in February, 1951, at the age of 29. The only obstetric abnormality was some hydramnios. Labour started spontaneously at 42 weeks. The first stage lasted 18 hours and the second one hour. After an episiotomy, a 9½-lb. (4.3-kg.) baby girl was born spontaneously and thrived.

Comment

Because of its comparative rarity congenital vaginal atresia with its complications is only briefly described in most textbooks. However, in the Tropics the condition is by no means uncommon, and Mr. Green-Armytage's great experience there, together with the outcome in the above case, adds much weight to his opinion that laparotomy should be carried out in cases complicated by haematosalpinx.

Bernstein and Walter (1939) reported 19 cases of haematometra and thought that drainage from below is effective, thus avoiding a laparotomy. Curtis and Huffman (1950) stated that where there is haematosalpinx the tubes are usually closed. They believed that abdominal exploration should be reserved for those cases in which a pelvic mass remains after evacuation of the haematocolpos. In their review of 50 cases of congenital vaginal atresia, Christie Brown and Brews (1930) reserved laparotomy for those cases which had distended Fallopian tubes. They pointed out how undue abdominal pressure during examination could lead to tubal rupture, making salpingectomy and sometimes hysterectomy necessary.

When the tubes are found to be distended at laparotomy they should be emptied with care by milking blood into the uterus. If this is not possible, incision of the haematosalpinx (salpingostomy) would seem preferable to resection.

I have not been able to find in the literature a success similar to that in the above case, although in the opinion of Christie Brown and Brews the prognosis with regard to subsequent fertility in treated cases of haematocolpos is excellent. It is probable, however, that there have been similar cases, and it would be interesting to hear of them.

J. G. Dumoulin, M.D., M.R.C.O.G.

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Reviews

GASTRIC ACID SECRETION

The Biochemistry of Gastric Acid Secretion. By Professor Edward J. Conway, M.D., D.Sc., F.R.S. American Lecture Series. (Pp. 185; 37 illustrations. 47s. 6d.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1953.

Professor E. J. Conway has written a stimulating and provoking book on one of the topics of great current biochemical and medical interest. It is a striking illustration of the unifying value of biochemical concepts that Conway discusses the mechanisms whereby the yeast cell can, under certain conditions, reduce the external *p*H to as low as 1.5 in considering the mechanism of HCl secretion in gastric mucosa, and is able to ascribe the production of acid in both instances to a K^+ and H^+ exchange. But, as he points out, "It is likely that the true analogy between the parietal secretion and the secretion of acid by yeast lies between HCl in the one and succinic acid in the other, the corresponding anions existing already in the cells." Conway puts forward cogent evidence to suggest that, with respect to gastric secretion, there are serious difficulties in assuming that the H^+ ion donor is a metabolized acid and concludes that the donor is a reduced heavy metal catalyst operating in a redox cycle across a membrane. He considers the energetics for such a scheme, and elaborates the principle into the "redox pump" theory of the manner in which a cell performs osmotic work.

Conway considers that, in gastric secretion, the restoration to the active parietal cell of H^+ ions removed in the oxidative phase of the redox cycle occurs through the ionization of carbonic acid, and the existence of carbonic anhydrase in the parietal cells is here of especial significance.

In discussing the ways in which the concentration of acid in the parietal secretion or in the gastric juice may be decreased Conway accepts the theory, put forward by Fitzgerald and Murphy in 1950, that urease, present in the mucosa, may be of significance in producing ammonia from urea and may be of functional significance in protecting the mucosa against acid. This view is, however, criticized by others on the grounds that the urease is not in fact of endogenous origin, but such criticisms do not affect the validity of Conway's opinions as a whole. The value of urea therapy in the treatment of ulcer cases with dyspepsia resistant to the usual treatment is advocated and discussed in the light of these views.

Conway's hypotheses have by no means been accepted by everyone concerned in researches of this kind, but here we have a lucid and readable discussion of the author's views on work that is one of the growing points of biochemistry. To those who wish to read an account of an individual viewpoint in a field of controversial interest by a modern biochemical polymath this book can be confidently recommended, and for the doctor who wishes to savour something of the excitement of fundamental research in a field of medical importance no better *hors d'œuvres* could be found.

F. G. Young.

SCIENCE OF NUTRITION

The Work of Sir Robert McCarrison. Edited by H. M. Sinclair, with additional introductory essays by W. K. Aykroyd and E. V. McCollum. (Pp. 327. 30s.) London: Faber and Faber. 1953.

This book contains a selection from the writings of Sir Robert McCarrison and a prologue made up of three essays, one by Dr. W. R. Aykroyd, who was for many years McCarrison's successor as director of the Nutrition Research Laboratories at Coonoor, another by Emeritus Professor E. V. McCollum, and a third written by the editor, Dr. H. M. Sinclair, and Mr. Selwyn Taylor. Much of the work reprinted is from books now mainly out of print or from journals not always easy to obtain.

The value of McCarrison's contribution to the science of nutrition, seen after an interval of fifteen to twenty years, is, in Aykroyd's words, "abundantly evident, and little importance need be attached to the occasional errors of an enthusiastic pioneer exploring new territory." A feature of this record is the contemporary interest of many of the conclusions drawn from McCarrison's own experimental work and observations. In an appreciation of McCarrison's studies Mr. Taylor concludes, "I know of no one else alive to-day who has contributed so much that is new to so many varied aspects of the goitre problem." McCarrison also recognized the special value of work on applied nutrition and summed up the situation in India in the following observation, which is as relevant to-day as when it was written many years ago: "Indeed the greatest of all problems in India at the present time is the adjustment of the population to its food supply. It is one that is capable of solution only by the people themselves: by the exercise of self-help; by the jettisoning of old habits and customs unsuited to modern economic conditions; by improvement in methods of agriculture, animal husbandry, and industry; and, above all, by restraint in reproduction."

We may join in the pleasure expressed by Professor McCollum in following McCarrison "through two decades toward the distant watch-fires of truth to express high regard for him as a man as well as an investigator," and at the same time share in this happy tribute to McCarrison on his recent seventy-fifth birthday.

B. S. Platt.

RADIOACTIVE ISOTOPES

Radioactive Isotopes: An Introduction to their Preparation, Measurement, and Use. By W. J. Whitehouse and J. L. Putman. (Pp. 424; 154 figures. 50s.) Oxford: At the Clarendon Press. 1953.

The doctor of medicine in the world to-day, and more particularly to-morrow, cannot afford to forget the physics of his premedical training. Radioactive isotopes have come to stay and will be further developed for therapy and for various forms of investigation both at the bedside and in the laboratory. As a corollary, their production poses a problem in industrial and public health.

This new British publication is written by two physicists associated with the Isotope Division at the Atomic Energy Research Establishment at Harwell. "It is intended," they state, "primarily for the use of scientific workers who, while they may be experts in their own field of study, have no specialized knowledge of radioactive theory and technique." What need will it fulfil for the doctor of medicine?

The first three chapters are basically an exposition of the physical theory necessary. Chapter IV gives a useful account of the production of radioactive isotopes chiefly in the pile but also by cyclotrons. Chapters V and VI concern the detection and measurement of the radiations directly by particle counters and indirectly by virtue of the ionization produced; Chapter VI is perhaps rather ambiguously headed the "Gross Effects of the Radiations." With all this the modern medical practitioner in hospital, and especially his alter ego in medical research, needs to be acquainted. This volume will be a useful addition to his personal or departmental library. To his colleague, the hospital physicist, the work may well have a place on the bench. It is well supplied with tables and graphs, most, it is true, to illustrate the text, but many useful for day-to-day reference.

The last two chapters on "Some Applications of Radioactive Isotopes" and "Manipulation of Radioactive Material" can be helpful to both in the design of experiments and of routine work; neither is meant to be comprehensive but only illustrative.

The Oxford University Press have issued this book with their usual high standard of production, and they and the authors are to be congratulated on the absence of errors. (The reviewer is not competent to check much of the algebra.) Of necessity this has entailed delay, and the book reflects the state of knowledge at the end of 1950. It is too advanced for the beginner (for example, basic

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definitions like those of the curie and roentgen do not appear till chapters V and VI respectively) and not sufficiently comprehensive to be a sole work of reference for the moderately initiated. Nevertheless, it should compete successfully with, and complement, several similarly not complete and earlier manuals published in the United States.

J. F. Loutit.

SOCIAL MEDICINE

Social Aspects of Disease. By A. Leslie Banks, M.A., M.D., F.R.C.P., D.P.H. (Pp. 373. 20s.) London: Edward Arnold. 1953.

At first sight this book by the professor of human ecology at Cambridge appears to be a small textbook on general medicine in that a chapter is devoted to each system. But deeper digging reveals that the author has considered the main afflictions of mankind and achieved order and clarity by his systematic and systemic approach. The work is intended for ancillary workers in the medical and medico-social services, by which is meant, no doubt, health visitors, almoners, and workers in voluntary organizations. But Professor Banks hopes that the book will also interest doctors and medical students—a modest hope which will certainly be fulfilled.

The detailed discussion of each disease is concise and well done. It is always a difficult task to write satisfactorily for both lay and medical readers. The bias here is a little towards the medical side, which from the doctor's point of view is a good thing, although in consequence some of the matter may be found a little too technical for others. There seems to be an occasional lack of proportion in the space given to difficult diseases. For example, plague is considered at about the same length as bronchitis. Plague is the more dramatic; bronchitis is now far more lethal and presents a grave social problem which surely needs much more space than two pages. Those who live and work in public health in the north, where mortality is more than 20% higher than that of the country as a whole, would have welcomed more consideration of the effects of climate and atmospheric pollution. But these are mild criticisms, heavily outweighed by the general and particular excellence of the book.

Random sampling of the index demonstrates that the indexing is of the same high and careful standard as the writing. The binding, paper, and printing are good, and better than one may reasonably expect at the price. This book is recommended to doctors who appreciate the importance of relating therapeutic medicine to social conditions—and I would hope that this applies to all doctors.

C. Metcalfe Brown.

A GREAT DENTIST

Dr. Howe and the Forsyth Infirmary. By Rollo Walter Brown. (Pp. 188. £1 2s. 6d.) Harvard: University Press. London: Geoffrey Cumberlege. 1953.

Between 1842 and 1854 four sons were born to the wife of William Forsyth, a prosperous Scot whose business was near Boston, Massachusetts. All four sons became rich, but only two married, and neither had any progeny. Yet they were fond of children and wanted their money to benefit the little ones, so, on the advice of a certain Dr. E. A. Johnson, they gave or left their money to found a large and palatial dental clinic—the Forsyth Infirmary. This clinic became the model for others in many parts of the world, and owed much of its success to the energy, ability, and initiative of Dr. Percy Howe, whose life-story is recounted in this book.

Percy Howe was a successful dental practitioner up to the age of 50, though he had an independent mind and, as best he could, carried out a certain amount of research in his spare time. When the Forsyth Infirmary was opened Howe was attached first as research worker and later as director, a post which he retained till he died at the ripe age of 85 in 1950. Under Howe's guidance the infirmary became a centre of research and dental education whose influence spread far and wide. Among those who were attracted by Howe's work were Sir Arbuthnot Lane, Sir James Mackenzie, Sir Arthur Keith, and, at a later date, Lady Mellanby.

Howe was years ahead of his time in many respects, but particularly in two. First, he realized, as Sir John Tomes had realized in this country 60 years earlier, that dentistry was a part of medicine and should have a course of training comparable to that required by the medical student. Secondly, he clearly appreciated that general diseases had an effect on the development and structure of the teeth, and therefore he advised that doctors and dentists should work more in collaboration and know more of each other's work.

Howe became attached to Harvard Medical School, and at the invitation of President Conant helped to found the Harvard School of Dental Medicine. There is no doubt that he helped to raise the status of dental education in America. His advice to dental students deserves to be quoted: "The best medicine for all who are buried in a profession is to find refreshment in other fields. They should make the acquaintance of eminent men. They should know good poetry and good prose, and they should learn how to write."

It is difficult for a writer who is neither a dentist nor a doctor to get the proper perspective in writing the life of such a man as Howe, but Mr. Rollo Walter Brown has succeeded in giving a good picture of Howe's personality. Incidentally, he has also given vivid vignettes of the brothers Forsyth. Listen to John Forsyth giving advice to a young girl: "Now don't put off too long doing the things you think you'll enjoy. Look at all these fine books I kept buying and meaning to read some day. But I waited for the day when I'd have lots of time. And now I fall asleep reading the newspaper."

Zachary Cope.

GROWING UP

Attaining Womanhood: A Doctor Talks to Girls About Sex. By George W. Corner, M.D. Introduction by Dr. Eustace Chesser. (Pp. 102; 14 figures. 6s.) London: George Allen and Unwin. 1953.

Attaining Manhood: A Doctor Talks to Boys About Sex. By George W. Corner, M.D. Introduction by Dr. Eustace Chesser. (Pp. 87; 16 figures. 6s.) London: George Allen and Unwin. 1953.

In these books Dr. G. W. Corner, pre-eminent as a scientist, leaves his backroom laboratories and assumes the roles of father and mother to the adolescent. He brings with him his natural charm and lucidity as well as unsurpassed knowledge of the physiology of reproduction, and wisely keeps as far as possible to the scientific side, leaving the reader to infer the morals from the story. The intended readers are girls aged 12 years and over, and boys presumably of similar age. The great difficulty is terminology, a matter on which Dr. Corner himself comments. He has avoided childish language and instead uses technical terms throughout—defining each when first used. Nevertheless, one gets the impression that the young will find it hard to read with understanding, or without frequent recourse to a dictionary.

The girl's book contains a section on the male and the boy's book a section on the female, and several of the chapters and illustrations are common to both. Parents with mixed families may therefore wonder why they should have to obtain two books when with slight modification one might have sufficed. There is in any case something to be said for making no distinction between the sexes where instruction of this kind is concerned.

The subject matter is as might be expected—comparative anatomy and physiology, ovulation, spermatogenesis, menstruation, conception, and childbirth, with reference to such matters as sex attraction and behaviour, masturbation, and venereal disease. It is all admirably done, and those parents who prefer their children to learn the facts of life from books rather than from themselves will find these among the best of their kind. None could be more authoritative.

T. N. A. Jeffcoate.

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY OCTOBER 10, 1953

TREATMENT OF BREAST CANCER

For half a century the operation of radical mastectomy has been the orthodox treatment for early cases of carcinoma of the breast. From time to time minor modifications have been introduced and the indications for carrying it out have varied within narrow limits, but by and large the solution of this therapeutic problem has been substantially that suggested by Moore[1] in 1867 and pressed with such vigour by Halsted[2] from 1889. But for some years the value of this procedure has been seriously questioned. An early sceptic was the late Professor Gask, of St. Bartholomew's Hospital, at whose instigation Mr. Geoffrey Keynes undertook to treat cases of carcinoma of the breast by the implantation of radium needles. This treatment was applied alone or in conjunction with a much modified surgical extirpation. Later Professor McWhirter treated a large series of cases of early cancer by simple mastectomy followed by *x*-ray therapy to the axilla.

So firmly established had the practice of radical mastectomy become that even to question its value smacked of *lèse majesté*, and those who had the courage to look for other methods had to face, not only the barriers of reasoned resistance, but an array of prejudice which lifted the discussion out of the cool atmosphere of scientific argument and plunged it into a cauldron seething with emotion. In our opening pages this week we publish a report by Mr. I. G. Williams, Mr. R. S. Murley, and Mr. M. P. Curwen, of St. Bartholomew's Hospital, on a series of 1,044 cases treated by different methods, including a series treated by Keynes and a comparable series submitted to radical mastectomy. This series of cases is discussed and analysed with all statistical safeguards, and the most striking of the conclusions is that, in terms of survival, there is not much to choose between radical mastectomy and procedures entailing a more modest surgical removal. These writers point out how morbid conditions, particularly oedema of the arm, are much more common after radical mastectomy, and we may naturally question whether this distressing price is worth while paying if the achievement in terms of survival is negligible. Recently McWhirter[3] has announced his ten-year survival rates, and these compare favourably with most of those published after more radical methods of treatment.

However, before relegating the operation of radical mastectomy to the category of a useless but spectacular piece of surgical virtuosity, there are certain considerations to be weighed. A comparison of the value of two different treatments can, it is true, commonly be made only by a statistical analysis. No amount of armchair pathology can support a method which is found to fail in practice. The difficulty, so far as the ordinary observer is concerned, is that the science of statistics has become vastly elaborate, and the exclusion of disturbing variables is an advanced mathematical exercise. Consequently a statistical analysis presents a structure so intricate, so specialized, and so formidable that this complicated erection has to be taken to pieces by an expert before a flaw can be detected in some small piece of the mechanism, upon which the whole working depends. The unprejudiced observer may therefore be pardoned if he views with some reserve statistical arguments alleging that one method of treatment is better, as good as, or worse than another in its effect upon survival rates. While the statistical instrument may be the one which must be used to measure these comparative differences, possibly this instrument is as yet insufficiently tempered to fulfil the difficult task which it is called upon to perform.

At a meeting this year of the Association of Surgeons the treatment of carcinoma of the breast was discussed. In the opening address Mr. Hedley Atkins warned his audience that the claims of rival schools of therapy which they were about to hear were unlikely to differ very much. He pointed out that a large proportion of patients with this disease would be dead within three years whatever was done. Another large group would survive five years or more in the absence of all treatment. It was only in a small fraction that, in terms of survival, it mattered what kind of treatment was given. If this third group was very small, the differences between any two methods of treatment would be very small also and might require the most careful statistical survey to reveal them. But he rightly added that very small differences in percentage survivals are of supreme importance to the individual patients who survive. Moreover, in the statistical field there is no series before or since which over-

[1] *St Bart's Hosp. Rep.*, 1867, **3**, 133.
[2] *Surgical Papers (Halsted)*, Baltimore, 1924, **2**, 3–50.
[3] Meeting of Association of Surgeons in April, 1953.
[4] *British Medical Journal*, 1938, **2**, 1071.

shadows that magnificent achievement reported by Gordon-Taylor[4] using radical mastectomy alone, in which his ten-year survival rates were 84% of stage-I cases and 29% of stage-II.

Although morbid sequelae are the bugbear of radical mastectomy, this operation has no monopoly in this respect. Oedema of the arm will occur, though less often, after deep *x*-ray therapy alone and not uncommonly appears before any treatment has been given at all. Furthermore, if a patient who has had a radical mastectomy performed and has subsequently received *x*-ray therapy is asked which of these two methods of treatment upset her the more, she will nearly always say *x*-ray therapy, and that quite emphatically. What modern statistical research has done is to shake surgeons out of a certain complacency about the results which they are entitled to expect from the operation of radical mastectomy. It has revealed alternative methods of treatment in a favourable light and has created a more eclectic attitude towards the problem. The days are gone when radical mastectomy is prescribed wholesale for all early cases of carcinoma of the breast.

Two questions need to be answered. First, is there a stage in many cases of cancer of the breast when, apart perhaps from a few stray cells which may lie for ever dormant within the embrace of the body defences, the growth is confined to the breast and to the glands in the axilla ? Secondly, is the proportion of these cases sufficiently large to justify the risks of unpleasant sequelae in selected instances in order to cure them ? If the answer to these two questions is yes—and it is so in the minds of many reasonable and experienced workers—then radical mastectomy still has a place, even if a limited place, in the treatment of cancer of the breast.

Perhaps long before this difference of opinion is settled its relevance will be as obscure as that of the humoral and Brunonian disputes of long ago. Neither surgery nor *x*-ray therapy will be the final answer in the treatment of this disease. Increasingly our hopes are set on the work of the endocrinologist, the virologist, and the experimental pathologist. In a paper at page 796 of this issue of the *Journal* Drs. B. A. Stoll and Frank Ellis review the effect of oestrogen therapy on pulmonary metastases. These workers demonstrate statistically what has been the universal impression, that in women well past the menopause the administration of oestrogens may produce a striking improvement in pulmonary deposits. Although the beneficial effects are only temporary, this palliation may be prolonged for some years. The increasingly favourable reports which are coming in demonstrate the effectiveness of these materials in some cases of advanced cancer, and are a further pointer to the direction in which future investigation will lie. In the meantime a willingness to understand and to use all the weapons that are to hand, clumsy though they may be, and a freedom from prejudice in favour of any exclusive or uncompromising practice, will serve our patients best.

SMOKELESS ZONES

In 1935, Charles Gandy, a Manchester barrister, proposed the principle of smokeless areas as a method of reducing smoke pollution in our industrial towns. The National Smoke Abatement Society, of which he was chairman for many years, approached the Manchester Public Health Committee, which in consequence caused the central area of the city to be surveyed in 1938 as a preliminary step to the creation of a smokeless zone. The outbreak of war held up this scheme, and it so happened that the area was heavily damaged by air attack. After the war the area, 105 acres in extent, was again surveyed, and it was found that the premises within it, consisting mainly of offices and shops and only a few dwelling houses, had more than 2,000 open fireplaces, most of which were fuelled by bituminous coal. The heating system of many of the buildings had already been modernized, and coal had been replaced by electricity, gas, or coke. This central area was therefore deemed to be suitable for an experimental smokeless zone.

There are no statutory powers of general application for the creation of smokeless zones, and the Manchester City Council had to obtain the necessary power, which it did by the Manchester Corporation Act, 1946. This pioneer legislation empowered the city council, among other things, to create a central smokeless zone, and made provision for the creation of other unspecified smokeless zones within the city boundary, subject to conditions including the approval of the appropriate Ministry. The central zone came into being on May 1, 1952.

Subsequently, some 14 towns obtained similar powers by means of local Acts, and other Acts are pending—for example, for the City of London. The City of Coventry created the first central smokeless zone of 30 acres on March 1, 1951, by virtue of its Corporation Act, 1948. In order to establish a

[1] Brown, C. M., *Med. Offr*, 1953, **90**, 8.
[2] Wade, A., *Smokeless Air*, 1953, **87**, 17.
[3] Goodman, N., Lane, R. E., and Rampling, S. B., *British Medical Journal*, 1953, **2**, 237.
[4] Waller, R. E., *Brit J Cancer*, 1952, **6**, 8.
[5] Doll, R., *British Medical Journal*, 1953, **2**, 521 and 585.
[6] Clemo, G. R., ibid., 1953, **2**, 670.

smokeless zone in a developed area a local authority must proceed by private Bill—an expensive and lengthy procedure. A model clause for inclusion in private Bills for this purpose has been prepared by a committee of Parliament, and it would appear that the time is now ripe for supplementary legislation to permit any local authority to propose smokeless zones and so avoid the heavy expense of promoting private Bills. It is an expense contemplated by large authorities with proper hesitation, and an impossible burden on small authorities with meagre resources.

In a smokeless zone the emission of smoke from any building therein is prohibited and there are prescribed penalties for breach of the order. Smoke includes the visible and tangible products of incomplete combustion; it does not include deleterious gases such as sulphur dioxide. Protection is given in most local Acts against unreasonable action by local authorities, and local authorities are always required to contribute to the expenses incurred in making premises smokeless. There is no control over railway locomotives or of some mining processes—a freedom which is much abused.

The creation of a smokeless zone is not without its difficulties. First, it is essential to obtain the support of public opinion. Secondly, persuasion and diplomacy are required to convince owners and tenants of premises within the proposed zone that it will be a good thing for the community and themselves. Thirdly, expert advice must be freely available in order that the conversion of fuel-burning appliances will be the most suitable for particular conditions. Fourthly, patient explanation must be given to demonstrate that efficiency and economy go hand in hand and that smoke, besides being a nuisance, is in itself a waste of expensive fuel. There are other serious difficulties in relation to industrial operations, but none of them is insurmountable.

The results in Coventry and Manchester have been most satisfactory. Dr. Metcalfe Brown,[1] medical officer of health for Manchester, has been so impressed with the success of the first year's operation of the central zone that he has already recommended an extension marginally of the zone. The city council has approved, and, subject to the consent of the Ministry, the existing zone will be increased to 235 acres in extent on October 1, 1954. There is still plenty of Manchester left to be made smokeless in due course.

Manchester is the nucleus of a congested industrial conurbation of nearly 3,000,000 people. At first sight, to create a smokeless zone of a mere 105 acres in the centre of such a mass of smoke-producing premises would appear to be a somewhat naive and quixotic gesture, with little hope of practical effect. But that effect has been achieved. The centre of Manchester is already clearer; there is a host of smokeless chimneys; the haze of smoke outside the zone contrasts markedly with the absence of visible smoke within the zone. The Press has commented favourably on "the hole in the fog." Business houses within the zone have written to the newspapers expressing appreciation of the results; commercial firms outside the zone have asked for extensions to include their premises; public opinion is strongly in favour.

At the annual conference of the National Smoke Abatement Society, which was held at Glasgow on September 30 to October 2, Dr. T. Morrison Clayton, medical officer of health for Coventry, referred to four categories of actual or potential smokeless zones. These were (1) industrial areas with heavy atmospheric pollution; (2) industrial areas with moderate pollution where redevelopment is planned; (3) residential areas in process of development; and (4) the environs of airports. Category (1) areas can be dealt with only by statutory legislation; areas in categories (2) and (3) and possibly (4) can be dealt with in the absence of special powers, for a planning or housing authority can usually apply conditions in relation to new buildings which would be difficult or undesirable to apply to existing buildings. Wade[2] has discussed the smokeless housing estate now in process of development by the Nottingham City Council—an excellent example of a residential area being developed (category 3). This scheme when completed will provide some 5,500 houses, 1,650 of which are already occupied. Each tenancy has a condition that no smoke will be emitted from the house and that all appliances using any solid fuel shall be fired by smokeless fuel. This is the largest smokeless area in this country. Coventry, Manchester, and Nottingham together have shown that smokelessness can be attained both at the centre and at the periphery of industrial centres.

Reduction of atmospheric pollution needs the support of the medical profession. There is a mass of evidence on the relationship between smoke and ill-health; for example, Goodman, Lane, and Rampling[3] state, "There is no doubt at all that smoke associated with fog has a serious effect on the elderly and the chronic bronchitic in precipitating a mortal bronchopneumonia." Their data on chronic bronchitis demonstrate that the death rates from bronchitis in men aged 45–54 are highest in the regions of Newcastle, West Riding of Yorkshire, Liverpool, South-east Lancashire, and Birmingham. It is not a mere

coincidence that the atmosphere of these regions is heavily polluted. The presence of benzpyrene in city air has been reported by Waller[4] and Doll,[5] and by Clemo[6] at a recent meeting of the British Association. The need for reducing the smoke menace is emphatic and clear.

THE RETURNED PRISONER OF WAR

The family doctor, consulted by a repatriated prisoner of war, may find that experiences during internment have had deep psychological as well as physical effects, and that the former are likely to be of special importance during the period of resettlement. The Serviceman never expects capture, and the violent change, affecting every detail of his life, strains all his bodily and mental resources. He is extremely depressed on capture. Weary, hungry, and longing for rest and security, he may be treated harshly and cruelly. The daily routine in which he had an established status has vanished. The customary habits are interrupted, and his individuality is lost. He is just one more prisoner, and his survival is of no interest to his captors. But this stage soon passes. He acquires new habits of life, accepts the grim situation, hopeful that somehow he will find means of escape. The group life of the camp, the irritations, the short tempers, the hard conditions, the monotonous and often insufficient food, the indefinite nature of his internment, are offset by efforts to score off his captors, to outwit them, and by a growing comradeship. The circumstances of his past life become idealized, and he pictures the future in rosy colours. Captivity, anyhow, will not last for ever ; when he gets home he will live as he has never lived before. These dreams of the future are a necessary and valuable compensation.

Many soldiers, particularly professionals, experience a sense of guilt on capture. The notion that he may be regarded as an unheroic figure, since he is no longer fighting, can lead the prisoner to expect a loss of caste in the eyes of those at home. Men captured after a tough fight and when every round of ammunition has been fired are free of this thought. The feeling of guilt is always intensified by thoughtless letters from home criticizing the prisoner for his capture and mentioning his newly found safety.

Some of these returned prisoners at the difficult period of repatriation are now seeking their doctors' help. In the excitement of returning to his family, and with the prospect of realizing his dreams, the repatriated man has probably forgotten the inevitable changes that time has worked in his home and his friends. His family have been forced to deal successfully with life without him. His children or his brothers and sisters have developed new interests. Should his wife have left him, he faces a catastrophic situation. The gulf between fantasy and fact is often extremely painful. The limited imagination of his family fails to picture the utterly different life he has led and is unequal to the strain of surrounding the returning soldier with sufficient sympathy. When the early days of home-coming have passed, the Serviceman may get the impression that in some way he has failed. The thought of personal guilt is repressed, becomes unconscious, and is projected. Then there come scathing remarks about politicians, employers, and those who in the security of home have become prosperous. The returned prisoner often has difficulty in resuming the daily financial responsibilities from which he was for a time free. In addition, his working skills may be impaired. In this atmosphere he may become aggressive, apathetic, or depressed, and perhaps alcoholic. Some even drift into crime as offering more excitement and a short cut to affluence. The problem of housing often intensifies the depression and resentment. Psychoneurotic symptoms—a fear of confined spaces, of crowds, of social occasions—may appear, and a tendency to exaggerate physical symptoms.

The doctor does not see those who grapple successfully with their difficulties. But the wise course with the man who consults him is to attend to his physical ailments and assure him at the same time that he is a normal person whose difficulties are in large measure due to the problem of resettlement. If the patient is unresponsive to simple measures, if he remains tense and maladjusted and suffers from insomnia, it is wise to call in a psychiatrist. Every man who has been a prisoner, even for six months, will be affected by it to some degree, and those who have been interned for two years or more will suffer more severely and their resettlement will be correspondingly difficult. Prisoners in Japanese camps during the second world war, and some in Korea, were always hungry. Food became the chief topic of conversation in prison camps and prison hospitals. Hunger overshadowed other instinctive tendencies, and sexual thoughts and activities faded. Abdominal symptoms are often mentioned by such prisoners on repatriation ; they are concerned about bowel movements, and complain of vague abdominal pains. Digestive troubles are to be expected with the change of diet—for example, from rice to Service rations. Extreme cold was common in Korea, but usually the staple diet of Indian corn, although lacking in variety, was adequate. Considerations of this kind should be taken into account and a straightforward explanation of the symptoms given with firm reassurance that with

treatment the trouble will quickly settle down. A quite unnecessary dread of impotence often follows the diminution of sexual interest. Again and again repatriated prisoners assert that they have suffered physiological harm and that they will never be the same men again. This fear of impotence often leads to sexual incompetence on repatriation. The origin of the fear and the fact that it is common should be explained, and the assurance that it is groundless should be given and can be given with confidence. Neurosis is rare among returned prisoners of war, and was almost unknown in the survivors of Japanese prisoner-of-war camps. Most of those released from Japanese internment were in sound physical and mental health, for the weaker had not survived. Even so, many were anxious about their health.

The difficulties of resettlement rather than the hardships of internment are likely to be the precipitating factor in neurosis. The physical complaints of young repatriated men can usually be treated on familiar medical lines, but psychological symptoms may be persistent. The doctor should avoid comments on imaginary illness and avoid also the words prisoner of war, or prisoner, for they are unpopular with ex-prisoners. No reference should be made to the circumstances of capture, and even when the patient mentions the subject discussion should be brief. The doctor asked to support a claim for a disability pension should be sympathetic but cautious. A pension has inevitable charms, but its effect on character may be detrimental. The patient must be encouraged to take up his civil life without delay. At every employment exchange there is an official whose special task is to advise on any employment problem, and to give information on the training schemes available for men who want to learn a trade or to enter a profession. The period of resettlement need not be unduly difficult. It is a transitional period when timely advice and informed common sense can modify unprofitable attitudes of mind towards illness and towards society.

ANAL FISSURE

The general practitioner is commonly presented with cases of fissure in ano, most of which respond quickly and satisfactorily to simple treatment. It is perhaps not well enough known that simple measures, properly supervised, will relieve the distressing symptoms of this common condition. Only a small minority of patients with anal fissure ever require operative treatment, such as that described by Mr. E. S. R. Hughes at page 803 of the *Journal* this week. Many of them would not need such radical treatment if they were properly managed in the first instance.

The most painful fissures are commonly the smallest and earliest ones. Contrary to widespread belief, a sentinel pile is not often seen in association with a fissure, and the linear acute fissure can be diagnosed without subjecting the patient to a painful examination. As Mr. Hughes rightly emphasizes, it is essential to secure the co-operation of the patient and to examine him gently and reassuringly. Once the fissure is seen, it is possible to anaesthetize the raw surface quickly and efficiently with 10% amethocaine or cinchocaine ointment. It can be best applied by firmly twisting a small pledget of wool on to an orange-stick, dipping the wool in the ointment, and then gently inserting it into the anus and in contact with the fissure. Within a few minutes the doctor can pass a finger gently and painlessly, and the very fact that he can do so greatly helps to secure the patient's confidence.

After the initial examination the patient is provided with 3% amethocaine ointment and a metal or plastic dilator. The ointment should be gently applied to the site of the fissure once or twice daily (and invariably ten minutes or so before a bowel movement) and the dilator then passed. Patients vary in their ability to grasp the importance of this treatment, and it is essential for the doctor, or a suitably trained nurse, to explain the procedure carefully and to supervise the patient daily at first. The properly instructed patient can then be seen at intervals, and his condition will generally be relieved in two or three weeks. Occasionally treatment is needed for a longer period, but, with attention to detail, rarely will this simple regime fail.

Skin sensitivity, as Mr. Hughes points out, sometimes occurs with local analgesic ointments, but it is less frequent if 3% instead of 10% ointment is applied. Some doctors administer only a 1% ointment, and certainly, once the patient's initial anxiety and sphincter-spasm are relieved, there is a good case for using a weaker preparation. If the patient is taught to apply only a small amount of ointment precisely to the fissured area, and if a simple lubricant is used on the dilator, the chance of skin sensitization is still further reduced.

Most proctologists will agree with Mr. Hughes's opinions on injection treatment and digital dilatation of the anus under general anaesthesia. When we come to that small but hard core of cases with chronic and complicated fissures which really need operation, there are arguments for and against the orthodox operation of excision and the one advocated by Mr. Hughes. There is no doubt that the site of excision needs careful supervision, both while epithelizing and shortly afterwards. During the latter period the epithelium is unstable and the underlying scar tissue is still rather rigid. Nevertheless it is remarkable how soft and normal the anal margin becomes. The theoretical advantages in applying an immediate skin graft are considerable, and those who practise the technique carefully will be satisfied with the results. Surgeons with experience of skin grafting will need no reminding that the after-care of cases treated in this way must be no less careful than that accorded to the granulating area after simple excision. There is, perhaps, no need to adjudicate on the relative merits of simple excision and excision with primary grafting, for each method has a place in treatment. Some will feel that there is no place for skin-

grafting a small area, but where larger areas of skin have to be excised there would seem to be much merit in applying a graft.

SPLENIC VENOGRAPHY

Portal hypertension which has caused haemorrhage from the oesophagus or upper part of the stomach has been successfully treated by anastomosing the portal vein or one of its tributaries to a systemic vein.[1,2] The obstruction to the portal blood may be either intrahepatic, as in cirrhosis of the liver, or extrahepatic, commonly due to obliteration of the portal vein or its replacement by tortuous varicosities (portal cavernoma), and it is not easy pre-operatively or sometimes even at operation to distinguish between the two conditions. The distinction is important practically, because in extrahepatic obstruction only a spleno-renal shunt is likely to be possible, whereas in intrahepatic obstruction a spleno-renal or porto-caval anastomosis might be carried out. Boulvin *et al.*[3] first showed that it was possible to outline the splenic veins by splenic puncture and injection of a radio-opaque substance into the spleen, and later Dreyer and Budtz-Olsen[4] used the same method in eleven cases.

In this issue of the *Journal* Drs. N. R. Konar and A. N. Sen Gupta report at page 810 the results of splenic venography in fourteen cases and indicate the dangers and possible uses of this method of investigation. Under local analgesia a lumbar puncture needle is inserted in the ninth left intercostal space and pushed into the splenic pulp; 20 ml. of a radio-opaque dye is injected as quickly as possible. Films are taken just before and 5 seconds after the completion of the injection. The radio-opaque substance leaves the spleen rapidly and passes via the splenic vein into the portal vein, outlining both these vessels and sometimes their tributaries. Obstruction of the splenic vein or extrahepatic obstruction of the portal vein can be shown clearly by this method.[4] In portal hypertension due to cirrhosis, the splenic and portal veins appear dilated and tortuous, but a similar appearance may sometimes be seen in patients with considerable splenic enlargement and increased splenic blood flow without portal hypertension. No serious ill effects after splenic venography have been encountered in the small number of cases reported so far, and the procedure seems to be reasonably safe. The chief dangers are haemorrhage into the substance of the spleen or laceration of its capsule with bleeding into the peritoneal cavity, and splenic venography by this method should not be used unless all facilities for carrying out an emergency splenectomy are available.

Diagnostic splenic puncture is rarely performed in Britain because of the risk of tearing the spleen, and the same caution should be observed in carrying out splenic venography. The reported number of cases in which it has been used is very small, and it must still be regarded as being in the experimental stage. However, in cases with gastric and oesophageal bleeding due to portal hypertension it may supply the surgeon with valuable pre-operative information about the site of the obstruction and may indicate which type of anastomosis is most likely to help.

1 Hunt, A. H., *British Medical Journal*, 1952, **2**, 4.
2 Walker, R. M., *Lancet*, 1952, **1**, 729
3 Boulvin, R., *et al.*, *Acta chir. belg.*, 1951, **50**, 534.
4 Dreyer, B., and Budtz-Olsen, O. E., *Lancet*, 1952, **1**, 530.

UNIT FOR SPASTIC CHILDREN

Just a year ago, on October 15, Lord Horder formally opened the Swindon unit for spastic children. In an interesting account of it that has recently appeared[1] Drs. J. B. Stewart and J. Urquhart, the medical officers of the unit, describe how it came to be founded. In 1951 it was known that there were eighteen spastic children in the district, but only one of these was accepted for admission to a special school for spastic children. The reasons for refusal were because the children were too young, too severely handicapped, or not sufficiently intelligent. There seemed no hope for the remaining seventeen children. These children, with fourteen others who were subsequently referred by paediatric and orthopaedic consultants, were all examined in the department of physical medicine of Swindon Hospital. Both parents of each child were asked to attend the examination, and the situation was carefully explained to them and their active co-operation was invited. A parents' association was formed, and when they found at last that interest was being shown in the plight of their children their enthusiasm and appreciation became embarrassing. Regular visits on one morning a week were arranged, and it soon became apparent that once more a gleam of intelligence could be detected in these unfortunates whose brains had been so severely damaged and who appeared to be afflicted beyond hope of help.

The authors appealed to the hospital management committee and to the local education authority in order to enlarge the scope of the work. They suggested that this could be done through the provision of a schoolroom in the department of physical medicine and by the appointment of a teacher. The authorities agreed, and provided the necessary funds for the unit. Ten of the spastic children were regarded as suitable for treatment and education in the new unit. The others were sufficiently well to be educated in ordinary schools or were too young to need more than treatment without education. Special school furniture was made in the department, and the teacher was given an opportunity of studying her pupils when they were being treated by the physiotherapists. A speech therapist was appointed for one session a week. The active co-operation of the parents was considered an essential in the training of the children. After a trial period of half-time schooling a programme of a full day of work and treatment was established and a mid-day meal was provided.

Those who have seen this unit at work are convinced of its value and of its success. It encourages the parents and treats the spastic children, and above all gives them a chance to acquire some education which otherwise might well have been denied them. The success of the Swindon unit offers an example and a challenge to those in other areas.

1 *Ann. phys. Med.*, 1953, **1**, 245.

CLINICAL PATHOLOGY IN GENERAL PRACTICE

THE PUBLIC HEALTH LABORATORY SERVICE

BY

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There is a growing demand from general practitioners for direct access to the laboratory. Since the Public Health Laboratory Service already provides the practitioner with assistance in the diagnosis of infectious diseases it may be appropriate to discuss the scope and usefulness of this service.

Some practitioners make much more use of the laboratory than others. A number of severe infections have now become rare, many respond to various of the new drugs, and difficult cases can usually be transferred to hospital without delay. Therefore many practitioners find it possible to carry on with little or no help from the laboratory. Others make regular use of the facilities provided, and believe that this enhances the quality and interest of their work. They realize that they have a responsibility to prevent disease as well as to cure it, and that outbreaks of infection cannot be controlled unless their existence is promptly recognized. They find that the identification of the organism causing an infection often enables them to make more intelligent use of antibiotics. The regular use of the laboratory assists them to form and control their clinical judgment and to assess the results of their treatment. The interest of the work is increased when they can obtain assistance in the investigation of new and unusual conditions.

There is a tendency to belittle what is called "postal pathology," in which the pathologist does not see the patient either in his bed or in the laboratory, but if laboratory facilities are to be widely available some such practice is inevitable. It leads to undesirable results only when the practitioner uses the laboratory as a slot-machine to deliver mechanical answers to a few questions, and when the pathologist reports with a rubber stamp. Much of the work of the P.H.L.S. is of a "postal" nature, but this does not prevent a good deal of valuable co-operation between the practitioner and the pathologist. The practitioner must have enough knowledge to request the appropriate investigation at the right time, must have been trained to collect specimens efficiently, and must provide the pathologist with sufficient information to allow him to assess the significance of his findings. The pathologist does not content himself with mechanical reporting, but takes every opportunity to discuss his results with the practitioner, usually over the telephone, but occasionally in the laboratory or at the bedside. He welcomes inquiries about appropriate investigations for particular cases and encourages visits to the laboratory to establish personal contact.

It is often desirable to transmit specimens to the laboratory by some means quicker than the post. In suitable cases relatives can be detailed to take them to the laboratory or to put them on a bus or a train. Many public health departments have collecting centres for specimens, and in some populous districts the P.H.L.S. organizes "specimen collection rounds" with calls at a number of such centres. The practitioner should consult the nearest public health laboratory or health department about the arrangements available in his area.

Nature and Scope of the Services Provided

There are 60 area and regional laboratories of the P.H.L.S., and in areas in which a laboratory has not yet been established arrangements have usually been made for the work to be done at the local hospital laboratory. The laboratories provide help in the diagnosis, prevention, and control of infectious diseases in the following ways: (1) with the general practitioner, by assisting in the diagnosis of suspected cases; (2) with the medical officer of health, by taking part in the investigation of established outbreaks and in the routine control of water, milk, food, and other environmental factors; and (3) on a national scale, with the central reference laboratories of the service, and with the Ministry of Health, by making observations on the spread of disease.

The diseases with which the service concerns itself are those that can be transmitted from man to man and from animals to man. The diagnosis of venereal disease is the one exception to this rule. Although this is generally the responsibility of the hospital laboratory service, arrangements differ from one area to another, and in some places the public health laboratories continue to carry out this work. Certain bacterial diseases, such as coliform infections of the urinary tract, are not strictly infectious. Their investigation is also the concern of the hospital laboratory service. It is best to make inquiries locally if there is any doubt about the correct laboratory for any particular specimen. Public health laboratories provide outfits for the collection of specimens, but do not pay the postage on packages returning to the laboratory.

The local laboratories of the service carry out a wide range of bacteriological investigations. In addition, they avail themselves of facilities at the reference laboratories for the more unusual and difficult tests.

Respiratory Infections

Sore Throat.—In the past, the main purpose of sending a throat swab to the laboratory was to exclude the presence of diphtheria. Now that this disease is less common, more attention can be given to identifying other causes of sore throat. However, the exclusion of diphtheria is still a matter of importance. It is unlikely that this country can be kept permanently free of the disease, even if the present level of immunization is maintained, and there is a danger that recrudescences might not be recognized promptly. Diphtheria in immunized persons is often clinically atypical, and the examination of the throat swab may be of most value in those cases in which the disease is not seriously suspected. Most laboratories issue a provisional report by telephone on the morning after the receipt of a swab, unless it arrives very late in the day. This report will state whether diphtheria bacilli, haemolytic streptococci, or Vincent's organisms are present, and will usually indicate whether they are few or many. On the following day the cultures are re-examined for diphtheria bacilli. A small proportion of previously negative cultures are then found to be positive, but fortunately this occurs rarely in clinical cases of diphtheria. On the second day, also, the haemolytic streptococci will have been grouped and the final report will be issued by post. When submitting a swab, the practitioner should include a brief account of the illness, and state

whether antibiotics or sulphonamides have been given. If diphtheria bacilli are found in the absence of typical symptoms, the laboratory will carry out a virulence test. The giving of penicillin locally or systemically may result in a false negative result for diphtheria. Small numbers of haemolytic streptococci are found in the throats of 10% of normal people in winter, but large numbers are usually present in streptococcal sore throat. Only a few may be present if the swab is badly taken (from the mouth rather than the fauces), or if specific therapy has been employed. A small proportion of swabs from undoubted cases of streptococcal infection, even of scarlet fever, will be negative. Haemolytic streptococci of groups A, C, and G are pathogenic for man, and the other groups can be disregarded as causes of upper respiratory infection. All are penicillin-sensitive. Vincent's organisms are found in large numbers in association with a well-defined clinical type of throat infection, and also occasionally in some blood diseases and in glandular fever. Small numbers may be present in the normal throat. The interpretation of a positive result is therefore a matter of clinical judgment. The laboratory does not usually mention the other types of bacteria present in throat swabs, as none of them is known to be associated with any particular disease of the throat. Swabs from about 50% of cases of sore throat are negative for any recognized pathogens.

Nose and Ear Infections.—All organisms grown from swabs of nasal and aural discharges will be mentioned in the report, with the exception of *Staphylococcus aureus* and non-pathogenic types of *Neisseria* in the nose, as any or all of them may be of clinical significance. As treatment will probably be directed to their elimination, it is usual to perform antibiotic sensitivity tests.

"Pneumonia."—Requests for bacteriological examinations in connexion with uncomplicated cases of lobar pneumonia are rarely made nowadays, as prompt response to chemotherapy is the rule. However, culture of the sputum may be very valuable if the case is unusually severe, clinically atypical, or does not respond to treatment. In addition to pneumococci, the examination may reveal *Staph. aureus*, Friedländer bacilli, or *Haemophilus influenzae* in large numbers, and in such cases the sensitivity to antibiotics should be determined. Sputum examination in more chronic conditions may result in the detection of an unexpected case of tuberculosis or fungus infection. Since the remarkable change in the prognosis of lobar pneumonia more attention is being given to the so-called atypical pneumonias. In addition to a routine sputum culture, the practitioner may request an examination of the patient's serum for various antibodies. Two of the diseases detectable by this means are of animal origin (and therefore preventable) and one is susceptible to antibiotic treatment. Serological tests for the following diseases are now in routine use: (1) " primary " atypical pneumonia, which is associated with cold agglutinins and the agglutination of streptococcus MG; (2) Q fever, a rickettsial disease which in this country is probably transmitted from cattle to man in milk or in dust; (3) infection with viruses of the lymphogranuloma–psittacosis group, which follows contact with many species of birds and is susceptible to aureomycin treatment; and (4) pneumonia following a recent influenza A or B infection.

Tuberculosis.—The laboratory will examine sputum, pus, urine, cerebrospinal fluid, and other materials for tubercle bacilli when requested, or when the history or pathological findings suggest the advisability of doing so. First, a microscopic search will be made, either on untreated or on concentrated material. There is usually little doubt that the acid-fast bacilli present are tubercle bacilli, though many strains of saprophytic mycobacteria are morphologically indistinguishable from tubercle bacilli. The laboratory ensures that its collecting receptacles are free from such saprophytes, and doctors obtaining specimens should take similar precautions. In some materials, such as urine, saprophytic mycobacteria occur commonly, and here a positive microscopic finding should be confirmed by culture or animal inoculation. Few pathologists like to report " Tubercle bacilli present " on a microscopic examination of any material, and most prefer the phrase, " Acid-fast bacilli present." However, they will generally make it clear when they consider that confirmation of the microscopic findings is necessary. Practitioners should not hesitate to ask for confirmation when the clinical condition and the result of microscopy appear to conflict. Culture and guinea-pig inoculation are also used to detect small numbers of tubercle bacilli when the microscopic examination is negative, but the result is not available for three to six weeks. The laboratory should be left to decide which of the two tests to employ.

Whooping-cough.—A correct diagnosis of whooping-cough is usually made by the practitioner or the patient's mother. Laboratory help is valuable in the atypical case, particularly where symptoms are modified by vaccination. Since chloramphenicol appears to be effective only when given within a week of onset, it is important to establish the diagnosis of an atypical case if there is an infant among the family contacts. The pernasal swab—a fine flexible wire swab which is passed backwards along the floor of the nose—is the most convenient and effective means of collecting material. Unfortunately it takes three to four days to complete the bacteriological examination. With present methods 80 to 90% of cases give a positive result in the first two weeks of the disease. The number of positives will be increased by taking two swabs, one through each nostril. Specimens should reach the laboratory on the same day unless a special transport medium is used.

Gastro-intestinal Infections

Diarrhoea with or without vomiting and fever is due to a variety of agents, including the dysentery bacilli, the salmonellae (including *S. paratyphi B*), staphylococcal enterotoxin, certain strains of *Clostridium welchii*, and, in infants, some serological types of *Bacterium coli*. Though it is often possible from the clinical picture to suspect the nature of the infection, bacteriological examination alone can reveal this with certainty. Failure to establish a bacteriological diagnosis seldom does much harm to the patients, as most recover during or some time after a course of treatment. However, there are great variations in severity from case to case of the same disease, and a mild attack of dysentery or salmonella infection may be followed by a severe or even fatal infection among the patient's associates. Bacteriological examination may reveal an unexpected connexion between a number of cases and lead to the identification and elimination of a source of infection. Although fairly rapid transmission of faeces specimens to the laboratory is desirable, most pathogens survive well enough to make postal specimens highly effective in acute cases. In the occasional case in which amoebic dysentery is suspected, a specimen should be examined within a very short time of being passed: it may be possible to arrange for the patient to defaecate at the laboratory. Rectal swabs are useful in some circumstances, as they can be conveniently and quickly collected. Some laboratories provide a special apparatus, but a moistened throat swab is quite effective if it really reaches the rectum. In acute cases of diarrhoea the results are good, but in convalescent cases and in typhoid fever they are inferior to those of faeces culture. Rectal swabs must reach the laboratory within a few hours. In most acute salmonella and dysentery cases a provisional report may be given on the day after the specimen is received. A final negative report is usually given at 48 hours and the exact identification of a pathogen may take longer.

Unexplained Pyrexia

There are a number of febrile conditions in which the laboratory can be very useful. The blood can be examined for evidence of typhoid fever, Weil's disease, undulant fever, glandular fever, infectious endocarditis, and a number of

other diseases. The laboratory will supply outfits for the collection of blood for culture and for serological tests, together with a sterile syringe. Many practitioners find it convenient to keep such an outfit in readiness. The pathologist will always be pleased to give advice on the appropriate investigations in cases of unexplained pyrexia.

Infections of the Central Nervous System

The practitioner may not often be called on to investigate infections of the central nervous system, as such cases are usually admitted to hospital at an early stage. Investigation usually begins with a general examination of the cerebrospinal fluid to exclude pyogenic and tuberculous meningitis. In cases of lymphocytic meningitis there are various valuable serological tests, including those for lymphocytic choriomeningitis, canicola fever, and mumps infection.

Skin Infections

Bacteriological examination may be of value in some skin diseases. In unusual or intractable pyogenic conditions, a culture and sensitivity test, together with a search for the focus of infection, may be useful. The examination of scales or hair from suspected cases of ringworm may help in prognosis and may indicate a possible animal source of infection. Swabs from suspected cases of anthrax, especially among those not known to handle dangerous materials, may be of vital importance in securing early treatment.

Other Activities of the P.H.L.S.

Supply of Sera, Vaccines, etc.—The service takes no part in the supply of therapeutic sera, but holds stocks of certain prophylactic and diagnostic agents. It supplies vaccine lymph direct to the practitioner, and diphtheria prophylactics indirectly through the local health departments. It keeps stocks of scarce prophylactic agents such as typhus vaccine, rabies vaccine, gamma globulin, and anthrax antiserum, but typhoid, plague, and cholera vaccines are obtained from commercial sources. The laboratory staff will be pleased to advise about immunization procedures, but will not, as a rule, carry out inoculations. Skin-testing reagents, including Frei antigen, brucellin, Trichinella, and hydatid antigens, are available for suitable cases.

Field Investigations.—The service is constantly engaged in investigations into the source and mode of spread of infectious diseases, and in field trials of prophylactic agents. Although many of these activities are carried out in co-operation with the public health authorities, much help is obtained from general practitioners, and some schemes would be impracticable without their participation. Many practitioners are taking part in the scheme for the early diagnosis of influenza and others are collaborating in trials of whooping-cough vaccines. Those who encounter new or unusual types of infectious disease will find that the laboratory staff are anxious to assist in their investigations.

The general practitioner has direct access to the public health laboratory for the submission of specimens and for advice on the prevention and control of infections and on general problems of immunity. He will find many opportunities for useful collaboration with the laboratory, both in the solution of day-to-day problems and in the acquisition of new knowledge.

Next article on Clinical Pathology.—"Dispatch of Specimens," by Dr. Martin Hynes.

Refresher Course Book.—The first collection of articles in the Refresher Course for General Practitioners (fully revised) are available as a book containing 55 chapters, price 25s. Copies can be obtained either direct from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1, or from booksellers.

EUROPEAN HAEMATOLOGY CONGRESS

[From a Special Correspondent]

The Fourth Congress of the European Society of Haematology was held in Amsterdam from September 8 to 12. Over 500 members and about 250 guests attended from at least 28 countries.

Six main topics were chosen for discussion and over a hundred papers were presented. Immuno-haematology was dealt with first, the chief contributions being by J. V. Dacie (London), J. J. van Loghem, jun. (Amsterdam), C. Gasser (Zurich), J. F. Ackroyd (London), S. Moeschlin (Zurich), W. Dameshek (Boston), and M. M. Hargraves (Rochester, Minn.). Amongst the subjects discussed were the antibody patterns and clinical syndromes of acquired haemolytic anaemia, the mechanism of drug-induced and idiopathic purpura and granulocytopenia, and the significance of the L.E. cell. Further information was available on the characterization of the antibodies of acquired haemolytic anaemia, but there was nothing new concerning its aetiology or treatment. Recent work on anti-platelet and anti-leucocyte agglutinins indicates that many cases of drug-induced or idiopathic thrombocytopenia or granulocytopenia may have a pathogenesis comparable to that of acquired haemolytic anaemia. Dr. Dameshek in his usual challenging style went so far as to suggest that Henoch–Schönlein purpura was an immunovascular disease.

Barbiturates and Porphyrinuria

The metabolism of haemoglobin and erythropoiesis were the next main topics. The chief contributions were by H. Bénard (Paris), C. Rimington (London), and J. Waldenström (Malmö). By the use of tracer techniques in particular it has been shown that haemoglobin synthesis continues in non-nucleated erythrocytes, particularly during active blood regeneration. On the purely chemical side Professor Rimington presented new work on the mechanism of formation of porphyrins from porphobilinogen. Barbiturates can cause porphyrinuria in experimental animals, and there appears to be evidence that this can happen in man also, particularly where latent porphyria exists. The same may be true of lead intoxication.

The metabolism of iron and iron-deficiency anaemia were next discussed, and the remarkable elucidation of the metabolic pathways that can be obtained by using Fe^{59} was clearly demonstrated. C. V. Moore (St. Louis) made a plea for the abandonment of the title idiopathic as a description for certain iron-deficiency anaemias: in his view iron-deficiency was always due to blood loss, to deficiency of iron in the diet, or to failure to absorb it. Haemochromatosis and the siderosis due to transfusions were next considered, and finally vitamin B_{12} and the megaloblastic anaemias. The main papers were given by L. Heilmeyer (Freiburg) and C. C. Ungley (Newcastle).

Treatment of Acute Leukaemia

On the third day of the Congress three main topics were dealt with: acute leukaemia, lymph-node puncture, and the platelets. W. Dameshek (Boston) reviewed the treatment of acute leukaemia; in his experience the most promising therapy was a combination of A.C.T.H. and aminopterin. With this regime he had had 25 successive remissions lasting from four weeks to two years in cases of acute lymphocytic leukaemia in children and young adults. Some patients had had up to four remissions. The principal papers on lymph-node puncture and blood platelets were given by A. Pavlovsky (Buenos Aires) and S. van Creveld (Amsterdam), respectively.

The last topic discussed was that of blood coagulation. R. G. Macfarlane (Oxford) described his conception of the formation of blood thromboplastin, the main point being that the so-called accelerators are thought to be participants in the reaction which produces thromboplastin and not accelerators of the reaction of thromboplastin with

prothrombin. P. Owren (Oslo) reiterated his well-known views and nomenclature. F. Koller (Zurich), however, appeared to accept the Oxford view in large part; using a modified thromboplastin generation test, he had been able to demonstrate the presence of yet another coagulation factor, Factor 10. N. Rosenthal (New York) put forward evidence for a new (third) variety of haemophilia. The final paper was given by P. Nolf (Brussels), whose work on blood clotting, carried out many years ago, antedated to some extent some of the new advances. There seemed to be no new important advances in the treatment of haemophilia.

Where Congresses Sometimes Fail

Dr. S. I. de Vries, President of the Dutch Haematological Society, and his Secretary, Dr. M. C. Verloop, and the other members of the organizing committee are deservedly to be congratulated on the organization of the Congress. Without doubt it was a success, both socially and scientifically; it was probably at least as successful as any that have been held. However, a few reflections and minor criticisms are perhaps permissible. As in most congresses, there were too many papers, and not all the work presented was new. There was too little public discussion: as this was held after an hour or an hour and a half of papers there is little wonder that saturation point had been reached. Finally, the technique of presenting papers could and should be improved: some papers were excellently given, others by no means so well. Particularly before an audience of many nationalities there can be no excuse for a rapid oration illustrated by most complicated small-scale diagrams and tables. It is essential to present simple diagrams and abbreviated tables made with type of the largest possible size and to emphasize the main points of a diagram or table with a pointer. When this was done even those with an indifferent knowledge of German or French (or English) were able to understand what the speaker was talking about. All in all, though, it was a very enjoyable congress. The Dutch are surely a most generous and genial people.

VASCULAR SURGERY

[FROM A SPECIAL CORRESPONDENT]

The second congress of the International Society of Angiology was held at the Novo Hospital Escolar in Lisbon from September 18 to 20. The opening session dealt with aneurysms. Professor E. HOLMAN (San Francisco) discussed the care of traumatic aneurysms and arterial injuries. In the second world war popliteal arterial ligation had been followed by gangrene in 70% of cases. Arteriovenous fistulae had been treated by quadruple ligation and only exceptionally by restoration of continuity. Most of the patients were afterwards found to suffer from arterial or venous insufficiency.

The Lessons of Korea

During the Korean war the picture had completely changed, and restoration of continuity was now the rule. One surgeon reported 82 cases of arteriovenous fistulae with successful reconstruction as against only three failures, and similar results were reported from other Korean war hospitals. The reasons for the spectacular improvements were: better control of infection by antibiotics; improved technique in handling vessels; availability of blood and blood substitutes in unlimited quantities; training of surgeons in vascular techniques; evacuation of wounded soldiers by helicopters; and availability of homografts stored in Gross's solution at 4° C.

Professor Holman stressed three important rules in the modern treatment of vascular injuries. The first is that the main artery should always be controlled as a preliminary measure, if necessary through a separate incision, when dealing with any wound in which a major arterial injury is suspected. The second is the importance of maintaining the blood pressure at normal levels by repeated blood transfusions following operations of arterial repair. Finally and most important, "Do not wait. Prompt intervention and reconstruction is the rule." Professor Holman's lessons from the Korean war, and the figures which he quoted, many of which have not yet been published, were of absorbing interest. The emphasis on large transfusions is a fruit of the work of the Medical Research Council investigators, R. T. Grant and E. R. G. Reeve, and of Simeone and his colleagues in the U.S. Army, which showed that "shock" in the old sense is rare or non-existent, and that its symptoms are really due to unrecognized or underestimated blood loss. The American Army system in Korea of training large numbers of young surgeons in the methods of vascular repair has paid handsomely in the good figures achieved, but perhaps the most startling lesson lies in the last principle that Professor Holman enunciated. Prompt intervention in arterial injuries is quite contrary to the conservatism which was the best practice under the circumstances of the two world wars.

Mr. D. J. ROBERTSON (London) described a series of 32 patients with congenital arteriovenous fistulae of the limbs. In 18 the disease was of a localized type and often suitable for surgical treatment, but in the remaining 14 it was diffuse and less easily treated, amputation being necessary in some cases. He warned against the bad and often disastrous effects of proximal arterial ligation. Dr. A. BLAKEMORE (New York) described the results of treating aneurysms by excision and restoration of continuity with a tube of Vinyon-N plastic cloth, a method which showed promise. Sections obtained later showed that the tube became lined with tissues resembling intima. Prostheses such as these, should they prove successful on more protracted trial, would offer obvious advantages over stored homografts.

Dr. F. GERBODE (San Francisco) discussed the uses of blood-vessel grafts in repair of major vessels. Stored arterial homografts were best reserved for use in older patients, as little was yet known about the long-term changes which might occur in the grafts. In young patients it was best to use vein autografts whenever possible.

Surgery of the Mitral Valve

Professor E. HOLMAN, in opening the discussion, said that too little credit had been given to Sir HENRY SOUTTAR, of London, for his pioneer operation on the mitral valve many years ago.[1] Dr. E. S. HURWITT (New York) showed a film illustrating the action of the mitral valve in the dog. The sphincter-like action of the annulus was clearly responsible for a great proportion of the closure. The slackening of the chordae tendineae during closure and their pulling effect on the edges of the cusps during opening were beautifully demonstrated.

Dr. F. GERBODE (San Francisco) discussed the indications for surgery for mitral stenosis. The majority of cases never required operation, but during the third or fourth decade of life deterioration due to myocardial changes, shortening of the chordae, or narrowing of the orifice might make operation necessary. It should never be done prophylactically. In those patients in whom disability had necessitated operation the mortality rate had been ten in the first hundred. With greater experience this figure became lower. The main indication for operation was progressive disability in the absence of major physiological defects of other valves. Age itself was no longer a contraindication. Originally the limits were set between 20 and 40, but recently older patients had been treated with success. Previous embolism or auricular fibrillation were not contraindications. Nor was a mild degree of mitral regurgitation, but this was often difficult to diagnose, and in many cases no pre-operative signs existed. Patients with predominant regurgitation were unsuitable for valvotomy. Clinical examinations and plain radiology were the most important elements in diagnosis. Cardiac catheterization and angiography were necessary only in a minority of cases.

A number of surgeons from European centres reported results and described indications in general agreement with

Dr. Gerbode. Professor A. M. DOGLIOTTI, of Turin, reported a mortality of less than 7% in 150 cases. In the last 50 cases only one death had occurred. His indications for operation included some patients with less severe disability than those in Dr. Gerbode's series, and in general it was evident that each surgeon's mortality figures depended upon the degree of illness of the patients included. Dr. C. P. BAILEY (Philadelphia) had a very large experience of this type of surgery and advocated operation in many milder types of disease, including those in Classes I and II in the American Heart Association's classification. Dr. D. E. HARKEN (Boston) had an experience of 500 operations. In favourable cases his mortality rate was less than 3%, and he discussed methods of reducing post-operative morbidity and complications.

Late Results

Mr. R. C. BROCK (London) spoke of the late results of mitral valvotomy. He described the morbid anatomy of the diseased valve. It was possible for digital dilatation to enlarge the central opening to give a 1 to 2 cm. gap. This would produce a temporary relief of symptoms, but recurrence would take place unless the vital "critical areas" of adhesion which he described were broken down. The limit to improvement of function was set by the degree of deformity and fibrosis of the valve. If this was severe the valve would never work again even if the adhesions were cut. To make certain that a proper valvotomy had been done it was necessary to feel the papillary muscles and the chordae tendineae with the finger. In order to make it possible for long-term results to be studied scientifically and for different series to be compared an exact record of the state of the valve before and after valvotomy should be made. Four grades were suggested for this. Although it was really too early to consider late results on a detailed statistical basis, Mr. Brock gave some interesting general figures. Of 135 cases operated on personally and available for review one to five years after the operation, three had died and three had deteriorated during the time of observation.

Mitral Regurgitation

The treatment of patients in whom mitral regurgitation predominated over stenosis was a far more difficult problem. Dr. C. P. BAILEY described his experiences. The first operation tried was a modification of the Murray sling, in which a sling of pericardium was passed across the mitral orifice to act as a sort of flap valve. The mortality rate (38% in 57 cases) was prohibitive and the operation had to be given up. Attempts to improve the efficiency of the valve by placing a purse-string around the chordae proved fatal in two patients. His present operation consisted in opening up the adherent part of the valve orifice as in the stenotic cases and suturing the gaping inefficient part with a strip of pericardium passed by a special method. He had done 86 of these operations with a mortality of 27%. The improvement in the survivors was as good as in the cases operated on for stenosis. Dr. P. CHALNOT (Nancy) showed a film of experimental operations in dogs, in which a plastic ball was placed on the ventricular wall so that it helped to occlude the mitral orifice during systole. The animals survived provided the prosthesis was accurately placed. Dr. D. E. HARKEN had used this type of operation in man, but it had been disastrous. A sphere was the wrong shape; if a cylinder was used success could be achieved, and 25 patients had been treated with only three deaths. He showed a film of the operation.

The congress ended with papers on general subjects. Dr. H. B. SHUMACKER (Indianapolis) described a method of closing inter-atrial septal defects by invagination of a pocket of pericardium which had been used with benefit in an 11-year-old boy. Attempts to close interventricular defects had failed, largely because the patients were in extremis before operation. Mr. D. J. Robertson (for Mr. J. B. KINMONTH, London) described the lymphatic circulation in patients with lymphoedema. Outlining lymphatics at operation with dyes had shown that the lymph trunks were dilated, tortuous, and incompetent, resembling varicose veins. There was no evidence that obstruction existed. Benefit could be obtained from lymphangiectomy. Dr. E. J. WYLIE (San Francisco) described his experiences with thromboendarterectomy in 50 patients with isolated areas of arterial thrombosis between the level of the lower abdominal aorta and the popliteal artery. Sixteen had re-clotted. There were nine deaths. These figures did not dispel the feeling of disfavour with which the operation is regarded in England, and it was interesting to learn that Professor dos Santos, who originated it, was now pessimistic about its results.

REFERENCE

[1] *British Medical Journal*, 1925, 2, 603.

THE NEW ACADEMIC YEAR

MINISTER OF HEALTH AT KING'S COLLEGE HOSPITAL

The opening of the 124th session at King's College Hospital Medical School, Denmark Hill, took place on October 2, Sir WILLIAM GILLIATT presiding. The Minister of Health, Mr. Iain Macleod, attended and presented scholarships and prizes to 24 recipients. THE DEAN (Dr. Vernon Hall) said that the Minister had agreed that the medical school needed about 150 beds for teaching purposes additional to those available in the King's College Hospital group, and that these beds should be under the clinical control of the school's teaching staff. Agreement in principle had also been reached between the regional hospital board, the Camberwell Hospitals Management Committee, and the medical school for the use of beds in Dulwich Hospital for this purpose. But the Ministry had still to decide who was to meet the not inconsiderable cost of these beds. Moreover, this scheme of association, while welcome, was not, in the opinion of their teachers, the final solution. Every teaching hospital needed a large medical staff in the interests of undergraduate education, and only by having more beds under its control could the board of governors make the fullest use of its medical staff and thereby reduce the cost of patients' treatment. Further, until the parent hospital could provide more beds the school could not proceed with its plans for the provision of professorial units in some of the clinical teaching departments.

The State and the Teaching Hospitals

Mr. IAIN MACLEOD began his address by quoting passages from the speeches made by Sir Lionel Whitby and Sir Richard Livingstone at the recent First World Conference on Medical Education, and he took as his theme "the philosophy of the first-rate" as expounded by the latter speaker.[1] The Minister said that, although he was not conversant with the content of the medical curriculum nor with the techniques of medical education, he was very much concerned with what industry would call the "end product," and, for good or ill, he was by far the largest employer of those who emerged from the schools. Five years after the inception of the National Health Service might be a good time to consider the relationship between the university, the teaching hospital, and the Ministry. Medical schools were now entirely free within the university sphere to determine the method and content of medical education in the same way as the other schools of universities. In accordance with the well-established principle that the State should not interfere with university education, Exchequer assistance was given through the Universities Grants Committee, with which the universities dealt direct. Mr. Macleod added that many people felt that the hospital system could be improved by the general application of the block system of grants. That was a point to be considered by the Guillebaud Committee.

The Minister went on to ask whether the number of students entering the medical profession was adequate to the needs of the community. The figures for entrants in

[1] *British Medical Journal*, August 29, p. 454.

1951–2 represented no very great increase on those for 1938–9. This was not due to any lack of demand for such facilities. The reason was partly that there had been no recommendation for an increase, and partly that the medical schools felt that they were not therefore called upon to incur risks to their standards which would be involved by a large increase in numbers. It was a very difficult balance to strike, because, while too few doctors were a threat to the health standards of the community, too many doctors might well constitute a threat to the standard of medical education itself. It did not appear from the figures that the introduction of the National Health Service had in any way prejudiced entry into the medical profession, although it had been necessary from time to time to take some steps in order to secure what seemed to the Ministry their correct distribution. This had been done so far as general practitioners were concerned through the Medical Practices Committee. An attempt had also been made, not wholly successfully, to meet the difficult position that had arisen in the senior registrar group, upon the solution of which depended the future of a stable and established consultant and specialist service.

They must not lose sight, Mr. Macleod continued, of the dual function of the teaching hospitals—namely, to provide hospital service and also to provide clinical facilities for education. There might be a real risk in the demand by the school for clinical facilities for specialisms and research, to the detriment not only of the hospital service but of the normal clinical facilities for undergraduate medical education. It was of great importance that the Medical Research Council, in collaboration with the Ministry and other interested bodies, had taken steps to put clinical research on a proper footing, with special financial arrangements by the Treasury under the aegis of the new clinical research boards. Thus it was hoped that the partnership between the schools and the National Health Service would present no difficulties in the future.

Although owing to the introduction of the National Health Service the hospitals were freer from financial worries, there were those who regretted that with the substitution of the Ministry for the board of governors as the final arbiter in so many matters of policy some intimate relationship had been lost. Mr. Macleod thought that it was possible to overestimate this, and he liked to think that in this respect matters were getting happier all the time. In the same way, in another field, that of general practice, the picture presented in the valuable report on the survey recently carried out by the British Medical Association, although not unfavourable, was, Mr. Macleod believed, less happy than the picture as it would be now (the survey was made in 1951). The situation was getting steadily better.

A vote of thanks to the Minister was proposed by Sir Cecil Wakeley, P.R.C.S., and seconded by Dr. F. S. Cooksey.

ROYAL FREE HOSPITAL SCHOOL OF MEDICINE

The prize-giving at the Royal Free Hospital School of Medicine took place in the Beveridge Hall of the Senate House of the University of London on October 2. The Dean (Dr. Katharine Lloyd-Williams), who presided, referred in her report to the recent First World Conference on Medical Education. She had found it most stimulating and interesting, but even six years' training could do no more than lay the foundations on which true medical education was based. She then referred to distinctions obtained by Royal Free students, and paid a tribute to the staff. There then followed the prize-giving.

The Student's Debt to Society

Miss G. E. M. Jebb, former Principal of Bedford College, gave a brief inaugural address. She stated that she knew nothing about medicine nor about science, and what she had to say referred to students in general. Anyone venturing upon a university career found himself a member of a large group or society with a certain status and privilege, but also with special duties and problems. All students in every grade and branch of learning had one thing in common, that they were in a position of economic dependence. This was a thorny subject. Economists divided society into producers and consumers, and the university student was in the rather embarrassing position of remaining a consumer at a time when most others of his age were already pulling their economic weight as producers. For some time he must depend on the activities of others to sustain him.

Another way of looking at the situation, Miss Jebb went on, was that the student represented an economic investment; he was working for a future, undergoing in many cases a long and severe training, with the expectation of becoming a very effective producer for the community. At present some 30% of students were wholly supported either by their parents or from private funds; the remaining 70% were to a greater or less extent supported from public funds, State or local. While young persons of the present day were most reluctant to be a burden on their parents, there was not the same sensitiveness with regard to the national exchequer, and in this as in other directions people looked upon public funds as an unlimited source from which to draw. Students were in a sense highly privileged persons, and the higher their privilege the more need was there to recognize their obligations. The larger the expansion of the Welfare State, the greater the need for a rising standard of what she called economic morality. The student would be a worthy "investment" if he set out upon his career conscious of his obligations and determined to make an ample return to the community in the service for which he had been trained.

A vote of thanks to Miss Jebb was accorded on the motion of Dr. H. E. Dimsdale, seconded by Dr. L. M. Dickson.

Correspondence

Because of the present high cost of producing the Journal, and the great pressure on our space, correspondents are asked to keep their letters short.

Orthopaedic Care in Poliomyelitis

Sir,—We have read with some dismay a document just circulated by the Welsh Regional Hospital Board to every consultant asking "to make sure that the arrangements for the admission and treatment of cases of poliomyelitis in their regions are up-to-date and efficient," and reporting a meeting several weeks ago of 35 physicians, otolaryngologists, and anaesthetists, together with representatives of the Welsh Board of Health, the regional hospital board, and a number of co-opted members, which recommended that teams should be set up throughout Wales for the treatment of acute poliomyelitis, comprising a physician, E.N.T. surgeon, anaesthetist, neurologist, and physiotherapist.

Throughout the whole of this lengthy document and its attached memoranda and reports, and throughout the whole of its recommendations, there is never one single mention of the orthopaedic surgeon, who, of course, has the responsibility of looking after these patients for the rest of their lives and cannot do it well unless he starts from the beginning. No orthopaedic surgeon was invited to attend the conference. There was no proposal to include an orthopaedic surgeon in any of the teams—only a physiotherapist, who, bless her heart, would not get far among the otolaryngologists and anaesthetists who are to treat poliomyelitis. No view was sought from any orthopaedic surgeon; there was only a report from Dr. Ritchie Russell's medical registrar.

Orthopaedic surgeons, who are necessarily tolerant, have applauded the recent enthusiasm of some physicians and neurologists in the management of poliomyelitis, especially since the recent epidemic in Denmark, which showed so high an incidence of bulbar palsy (though, let it be noted,

a high incidence also of limb paralysis), even when recent observations and writings have sometimes tended to suggest that only physicians or neurologists are really capable of treating acute poliomyelitis. But when enthusiasm becomes so fanatical that every consultant in one region of the Ministry of Health, and indeed in the whole of one country —Wales—is advised that no orthopaedic surgeon need be consulted on the advisory committee, or appointed to any of the special teams, and that a physiotherapist will suffice to aid the neurologists, otolaryngologists, and anaesthetists in the treatment of poliomyelitis, it is time to remind ourselves that when this was last done, ten or twenty years ago, we had great disasters and many horrible deformities, which could have been prevented but were relieved only after years of surgical treatment.

The British Orthopaedic Association recognizes at once the vital and imperative part that physicians, neurologists, and other specialists must play in the treatment of poliomyelitis in its acute stage. It knows too that the lifelong treatment of patients with residual paralysis succeeds best when orthopaedic management starts early, because only then is the serious and insidious deforming potentiality of poliomyelitis controlled. It asks only—and not for reasons of courtesy but only in the interests of good preventive treatment—that consultation and collaboration should begin from the beginning.—I am, etc.,

London, W.C.2. REGINALD WATSON-JONES,
President, British Orthopaedic Association.

Poliomyelitis and Inoculation

SIR,—In your annotation (*Journal*, September 19, p. 669) no direct reference was made to suspended whooping-cough vaccine. Dr. James Grant (*Journal*, August 15, p. 394) describes the introduction of the subcutaneous injection of this substance *after* an epidemic of poliomyelitis had ceased. Following consultation with the manufacturers and local health authorities, I have used the suspended pertussis vaccine throughout the past summer. In view of the guarded advice given by the Ministry, I would be glad of the opinions of others on the use of this latest method during epidemics.

It would also be of interest to know if there has been any correlation between painful lesions, elsewhere than in the pertussis-injected muscles, and paralysis. From the practical point of view such lesions could not be avoided in persons exposed to and infected with poliomyelitis. Yet much could be achieved if the precepts of Brehme and Leuterer[1] were adopted. They advocate heavy sedation in the pre-paralytic stage to prevent activity of the anterior horn cells. The following recently observed case seems to support their argument. A child of 7 years of age was confined to bed for five days with a fever associated with slight meningism. On the sixth day there was fibrositis of the left shoulder muscles, and two days later an abductor paralysis developed. This child had lain on her right side in bed, holding a comic in the left hand, for quite long periods every day. Only heavy sedation would have prevented the child from this type of activity.

In the interests of clinical research in general practice and the need for improved prophylaxis, certain problems require urgent consideration. First, the general practitioner must have an agreed set of criteria upon which to base a decision to treat a suspect case with full sedation while under observation at home. Secondly, some guidance is needed as to the type of drugs to use and the duration and mode of administration. It would be of help to the general practitioner if some guidance were given on the type of case which should have hospital treatment. For instance, should a patient exhibiting localized muscle pains, together with the other criteria, be sent to hospital?

As a basis for discussion I would suggest that the following criteria would justify a presumptive diagnosis of pre-paralytic poliomyelitis. These symptoms are based on recent experience of a number of cases which were not sent to hospital. It is not considered necessary to submit this type of case to lumbar puncture. (1) Fever with meningism as evinced by inability to touch the knee with the forehead. (2) Absence of diagnostic signs or symptoms of any other disease after a period of, say, six days has elapsed. That is to say, if at the onset there is no otitis media, classical tonsillitis, or respiratory infection, the case should be considered as pre-paralytic poliomyelitis in conjunction with the other criteria. (3) Headache. (4) Occurrence during the summer and autumn, especially when paralytic cases have been notified. (5) Failure to respond to antibiotics given as a therapeutic test. (6) The occurrence of localized persistent muscle pain, following the muscle ache which is present in the neck and limbs at the onset.

It would, in my opinion, be a helpful research if such cases were notified at the end of six days' observation. In this way some cases due to other diagnosable conditions would be eliminated.—I am, etc.,

Hornchurch, Essex. I. H. J. BOURNE.

REFERENCE

1 *Lancet*, 1953, 1, 700.

Cancer and the Public

SIR,—The Ministry of Health has sent a circular letter to all local health authorities on the subject of health education in relation to cancer (see *Journal*, October 3, p. 783). This action by the Ministry is an extremely serious matter for every family doctor in the kingdom.

In the first place, cancer is not a matter of health: the province of the M.O.H. is preventive medicine, and cancer cannot be prevented by public health measures. Cancer is the province of the family doctor, and I (for one) am not prepared to share my responsibility with a committee presided over by the M.O.H. The circular letter from the Ministry is the thin end of a very dangerous wedge. In the second place, it is extremely disturbing that the Ministry should have acted without any regard at all to the fact that half the family doctors who replied to a recent questionary made it clear that they are not in favour of public cancer education (*Journal*, July 18, p. 148). In the third place, it is only about two years ago that the Marie Curie Memorial Foundation was allowed to question the district nurses about our cancer patients without our knowledge, and very damaging statements were made and published without our being given any opportunity to refute them. Once bitten, twice shy.

Fourthly, I see no reason at all why the Ministry could not wait until the results of the present experiments in cancer education can be studied. I believe there are three different experiments in operation at the moment—in Manchester, in Leeds, and in York. I am sure that the only safe course is for every family doctor to make it quite clear now that he will have nothing to do with the Ministry's schemes until all this research has been completed and the results examined.—I am, etc.,

Wetherby, Yorks. R. L. KITCHING.

Reduction of Post-operative Pain

SIR,—The letter from Mr. J. B. Oldham (*Journal*, September 5, p. 570) is a timely warning that the new long-acting local analgesic agents must be used with more circumspection than their aqueous counterparts; as in the case of alcohol, phenol, and "proctocaine" their injection into the paravertebral region may very occasionally be followed by paraplegia or other undesirable sequelae, apparently as a result of tracking along the nerve sheaths. In the case of "efocaine," I believe that the neurological lesions are more likely to be due to the 78% propylene glycol solvent, which is strongly hypertonic, than to the anaesthetic base. I would suggest that its use in this area should be confined to emergencies such as arterial occlusion or intolerable pain, and that its injection should be preceded by a preliminary dose of aqueous local analgesic which would serve to indicate or exclude any misplacement of the needle, and incidentally supply some fluid to counteract the osmotic

effect of the glycol. Posterior intercostal nerve blocks should not be made within 3 in. (7.5 cm.) of the midline, so as to avoid any possibility of tracking along the nerves towards the cord.

Like Mr. Oldham, I have encountered uncomfortable neurological sequelae following axillary intercostal nerve blocks for upper abdominal operations, but in only five of the 46 patients followed up; three complained of anaesthesia persisting for more than eight weeks (one for four months), one of localized paraesthesia for about eight weeks, and one of intense hyperaesthesia from the thirteenth to the fifteenth day as the analgesia wore off. At the same time, this particular series demonstrated that bilateral intercostal nerve block could ensure a virtually painless wound in 83% of patients, so that fewer narcotic injections were required and early movement and expectoration both made easier for the patient. The dosage did not exceed 2 ml. per nerve, and 1.5 ml. was found to be adequate. It is to be hoped that improvements in the analgesic agents will enable the method to be developed with even fewer side-effects, but in the meantime the deposition of strongly hypertonic preparations near the spinal cord should be avoided.—I am, etc.,

London, N.2. HENRI ROUALLE.

Treatment of Plummer-Vinson Dysphagia

SIR,—The opinion of Drs. J. A. W. Bingham and J. S. Logan (*Journal*, September 19, p. 650) that no quantity of iron will ever correct the dysphagia of the Plummer–Vinson syndrome is not in agreement with my own small experience.

The reason for the changes in the tongue, mouth, pharynx, and oesophagus is that the epithelium of the upper alimentary tract is sensitive to iron deficiency, which impairs the constant replacement of cells which is normally taking place. Therefore, unless these atrophic changes in the pharynx and oesophagus have developed too far, they should, like the changes in the tongue, be corrected by the administration of iron.

I have recently followed up the progress of six patients who had attended hospital with hypochromic anaemia and dysphagia during the last five years. One patient had died from carcinoma of the pharynx, and one patient still had both anaemia and dysphagia; but the dysphagia had been relieved in two out of the four patients in whom the anaemia had been corrected.—I am, etc.,

Liverpool, 5. JOHN W. B. FORSHAW.

SIR,—In the *Journal* of September 19 (p. 650) one read with interest the article on the nature and treatment of Plummer–Vinson dysphagia, by Mr. J. A. W. Bingham and Dr. J. S. Logan. I hope they will forgive me for drawing their attention to the fact that it is incorrect to call this syndrome by the name of "Plummer–Vinson."

I would refer them to a letter written by the late Sir Arthur Hurst.[1] He mentioned that it was he himself who coined the heading of "Plummer–Vinson syndrome" in 1925, and he acknowledged his mistake. He admitted that he had neglected to refer to what had been written by Drs. D. R. Paterson and Brown Kelly in 1919. They described the syndrome as a clinical type of dysphagia associated with mucosal changes and anaemia. It was Paterson, too, who was the first to mention that post-cricoid carcinoma was far too frequent a complication to be a mere coincidence. It is worth remembering also that Vinson first described the dysphagia as hysterical.

Do not let us neglect the contributions of those who have practised the art of medicine in this old country of ours. Paterson, not long before he died, wished the syndrome to be called that of "upper dysphagia," but I prefer to hear of it as the "Paterson–Brown Kelly syndrome."—I am, etc.,

Cardiff. R. D. OWEN.

REFERENCE

1 *British Medical Journal*, 1939, **1**, 1201.

Penicillin Cover for Dental Extractions

SIR,—I was interested to read the letter by Dr. F. R. Coffin (*Journal*, September 5, p. 571) regarding penicillin cover for dental extractions.

Though positive bacterial cultures may be obtained from the blood of apparently healthy persons there is an increase of positive cultures (to 34%) after multiple tooth extractions in patients with no obvious gum disease, and to 75% from patients with severe gum infection.[1,2] These organisms almost certainly come from the gingival sulcus around the teeth and are driven into the blood stream by the movements of the tooth during extraction.

The number of organisms in the gingival sulcus may be unaffected by systemic penicillin, and is only effectively reduced by cauterizing the sulcus immediately before the extraction of the teeth.[3] It would seem, therefore, that enough penicillin should be given pre-operatively only in order to produce a bacteriostatic concentration in the blood and that this concentration should be maintained during the time of operation and for 24 hours post-operatively, by which time all bacterial blood cultures are negative.

A further "booster" dose of soluble penicillin may be given one hour pre-operatively. The penicillin cover does not have to be extended over a long period of time provided that the dosage is adequate and regular.—I am, etc.,

London, N.W.1. J. McL. SINGLETON.

REFERENCES

1 Okell, C. C., and Elliott, S. D. (1935). *Lancet*, **2**, 869.
2 Elliott, S. D. (1939). *Proc. roy. Soc. Med.*, **32**, 747.
3 Fish, E. W., and Maclean, I. (1936). *Brit. dent. J.*, **61**, 336.

Paraplegia in Paget's Disease of Bone

SIR,—In this unit we have had an example of paraplegia complicating Paget's disease of bone, and a brief reference to it may help to complete the picture of this complication so well painted by Mr. R. G. Robinson (*Journal*, September 5, p. 542) and add another case to the 44 published ones to which he refers.

In November, 1939, an engineer, aged 61, with osteitis deformans of the skull, spine, and most of the skeleton, complained of stiffness and weakness of his legs. From time to time, when he was in bed, involuntary withdrawal movements of the legs occurred. He had a prominent dorsal kyphosis, spastic paraplegia in extension with patellar and ankle clonus, extensor plantar reflexes, and loss of appreciation of light touch over the lower abdomen and legs. Cisternal myelography showed spinal block at the level of the seventh thoracic vertebral body, and on December 5, 1939, laminectomy was performed. The bone was particularly vascular and compressed the dural tube, which was decompressed but not opened. He recovered from his paraplegia, returned to work, at which, because of the war, he continued for 3½ years beyond the normal retiring age, and for 11 years following his operation remained well and was able to get about. Three years ago there was a recurrence of paraparesis and partial spinal block was demonstrated. With rest in bed the condition improved, but mental deterioration occurred, and he died with senile dementia in April of this year, aged 75.—I am, etc.,

Cardiff. LAMBERT ROGERS.

Primary Ovarian Pregnancy

SIR,—In the *Journal* of September 19 (p. 677) there is an interesting appreciation of the late Dr. G. P. Anning in which the writer mentions that in 1900 Anning reported a case of primary ovarian pregnancy published in the *Transactions of the Obstetrical Society of London* which "is believed to be the first reference to this unusual condition to be published."

I well remember this incident of long ago. The case was published under the names of Anning and Littlewood—Anning being the general practitioner in the case and Little-

wood the surgeon. The occasion excited much interest owing to the rarity of the specimen, and this was enhanced by what followed in the discussion, which was led by Bland Sutton, who was regarded hitherto as an unconverted sceptic of the happening of such a lesion. It seemed that Bland Sutton came to the meeting determined to clear this matter up once and for all, and he proceeded to climb down gently and elegantly. He stated that he had always been open to conviction and had never approached the subject in the "carping spirit of the scribes and pharisees," but with the open mind of a scientist. He stated that on the previous day he had paid a visit to Catherine van Tussenbroek in Amsterdam and had examined the microsections of her case of primary ovarian pregnancy which she published in 1899,[1] and had made up his mind that it fulfilled all the postulates demanded as proof of authenticity, and he conceded that the same could be said for the specimen now under review. Bland Sutton's employment of the language of Holy Writ to assist him with his descensus evoked some risibility, and helped to make the meeting one to be remembered.—I am, etc.,

Penzance. CUTHBERT H. J. LOCKYER.

REFERENCE

[1] *Ned. T. Verlosk.*, 1899, **10**, 187.

Stereoscopic Vision

SIR,—After having read Wilfred Harris's very interesting and intriguing article on the evolution of vision (*Journal*, August 8, p. 297), I was left with the impression that he suggested that stereoscopic vision necessarily implied binocular vision. This is, at least in the case of many humans, not so.

During the last two years I acted as subject in experiments at Durham University, carried out in order to investigate monocular stereoscopic vision and the factors influencing it. The postulate was established as a faculty possessed by nearly all the subjects. Since this is a faculty of which we ordinarily make little use, it might be expected to improve with practice. After the first few trials, during which we rapidly attained our top levels, there was little improvement in the number of correct scores. However, there was a long-continued improvement in our stamina and in our conscious certitude of the accuracy of our estimations of any particular distance. Nevertheless, right to the end of the experiments, the exercise of this faculty gave one the feeling that it was only just under conscious control—the feeling that the phrase "sixth sense" brings to mind.

Monocular stereoscopic vision is, in the main, a matter of cultivating a latent technical ability, but the technical heights attained depend in the last analysis not so much on the amount of practice as on one's genes.—I am, etc.,

Newcastle-upon-Tyne, 3. T. J. MUCKLE.

Should an Epileptic Drive a Car?

SIR,—In "Any Questions?" (*Journal*, September 12, p. 634) you reply from the point of view of the family doctor advising his patient. The medical officer of health or other doctor helping the licensing authority to decide whether to grant an application is, however, perhaps in an even more difficult position. The Road Traffic Act, 1930, requires the applicant to make a declaration as to whether or not he is suffering from specified diseases or disabilities or any other condition which would be "likely" to cause him to be a source of danger to the public if driving, and he may claim to be subjected to a test except in the case of such conditions as may be prescribed. Epilepsy is one of the conditions prescribed by regulations dated 1950; but the applicant, if his application is turned down, can still apply to the courts, where the licensing authority would be called upon to show that the applicant's epilepsy is likely to be of danger to the public.

Few of us would agree that an epileptic not completely controlled should ever drive a car, but it would be very difficult to claim that accidents would be likely, unless there is a strong probability of a fit occurring each time the driver went on the road. The whole position, therefore, is very unsatisfactory.—I am, etc.,

Lewes. F. LANGFORD.

Long-term Prognosis in Infantile Eczema

SIR,—I wish to thank Drs. Robert Warin, John Apley, and Mary Vowles (*Journal*, July 4, p. 46) for pointing out an implication which I had unintentionally allowed to arise (*Journal*, June 20, p. 1366). The paragraph following the one under criticism is an earnest of my recognition of the fact that no general conclusions may safely be reached.

However, I must rather guiltily confess that if I had said "I am" instead of "one is," the statement would be accurate because, as a dermatologist, I see mostly the cases which are of a similar grade of severity to those studied, and because I know of no investigation which relates severity of infantile eczema to long-term prognosis. Perhaps, as an extreme example, many asthmatics are actually of the atopic group, but never had any skin manifestations. Who knows?—I am, etc.,

Hamilton, New Zealand. M. J. PURDY.

The Cultured Student

SIR,—This matter was the subject of some recent correspondence in a well-known daily newspaper. None of the protagonists of the humanities in education seemed to appreciate the fact that even a smattering of the dead languages is of the greatest help to the medical student when he is learning the various new words which are necessary to express the facts and concepts of his profession. Very recently, when teaching the elements of description of the living cell to a group of student technicians, I found that, in ten minutes, I had made use of six Greek words, all of which were, in fact, Greek to them: but had the merest elements of the language been taught them when at school, the meaning of the words would have given them no trouble at all.

Distinction should be made between cultural education and scientific instruction. It is only too common an experience to see an able scientist trying to express himself in an unfamiliar medium—namely, lucid English.—I am, etc.,

Worksop. G. A. DUNLOP.

Almroth Wright

SIR,—Dr. Leonard Colebrook, in his recent fascinating Almroth Wright Lecture on Almroth Wright (*Journal*, September 19, p. 635), mentioned early difficulties in getting his anti-typhoid vaccine adopted throughout the Army. In fairness to the Army authorities of that time, it should be mentioned that one obstacle was the ferocity of the early brews of that vaccine. The only time in my life that I ever fainted was two hours after receiving the first dose of it. It was in December, 1899, on a troopship proceeding to South Africa, and the incident was humiliating for me because previously, when such reactions had been discussed by medical officers, I had scoffed and talked of "nerves." I was out of action with a good high temperature for three or four days.

In 1905, in Sialkot, India, I had great difficulty in persuading men of the 3rd Hussars to be inoculated, because a few years previously, in another station, a large number of them had had severe reactions following the injections. It was said that on a church parade the road had been strewn with fainting troopers who had been inoculated the previous day; a combination of general reaction and painful local reaction (in a flank), under tight equipment, had doubled them up. As encouragement, although I had had ambulatory typhoid in South Africa early in 1900, I had myself inoculated with the two doses then recommended. The second dose again put me to bed. Unfortunately I renewed my persuasion too soon after it; one member of my audience said: "*I* saw you, Sir, after that second dose!" I can testify that, in spite of these difficulties, during my service in India, from 1903 to 1907, inoculation with anti-typhoid vaccine was

well encouraged by the Army authorities. One commanding officer put the local bazaar out of bounds to troops who had not been inoculated, on the ground that there was typhoid in the bazaar and only men protected by the vaccine could go there safely.

Later, improvements in standardization, and perhaps the use of strains that made more even suspensions than the earlier ones, which were carried out in the Royal Army Medical College, eliminated most of these troubles, and perhaps if more work had been done in the early days on prevention of reaction the general adoption of the vaccine would have been quicker. But after-wit is a very cheap commodity.—I am, etc.,

London, S.W.1. L. W. HARRISON.

Industrial Health and the Universities

SIR,—In case your leading article, entitled "Industrial Health and the Universities" (*Journal*, August 29, p. 480), should inadvertently give the impression that the future, financial or otherwise, of the Newcastle Department of Industrial Health is in question, we feel that we should place the following facts before you.

When the Newcastle-upon-Tyne Division of the University of Durham accepted a grant from the Nuffield Foundation with which to found a department of industrial health, it had in mind a department which would interest itself primarily in work upon practical local problems within the field of industrial health, rather than a department which would promote either additional teaching or industrial health services. All the money spent in the first year of its work came from the Nuffield grant. The grant from the Nuffield Foundation is a diminishing one, and the expense of running the department has risen, so that in the year 1952–3 it cost eight times as much as it did in its first year. Of this sum, university money met 63%, industrial sources 23%, and the Nuffield grant covered the remaining 14%.

More than half the academic staff of the department hold permanent appointments. Of the remainder, one holds a three-year contract from an outside source, and three hold annually renewable posts, two of which are also financed by outside money. For the rest of this quinquennium the department will, like all the other departments in the Medical School, have to cut its academic coat according to its cloth. In future quinquennia it may expect to receive its due share of whatever funds are available for the purposes of the Medical School.—We are, etc.,

R. B. GREEN,
Dean of Medicine.
R. C. BROWNE,
Nuffield Professor of Industrial Health.

University of Durham
Medical School,
Newcastle-upon-Tyne.

Sweating in Shock

SIR,—In his answer to the question: "Why do shocked patients sweat?" your expert ("Any Questions?" August 29, p. 520) explains that the sympathetic overactivity which accompanies shock gives rise to sweating because the sweat glands are innervated by the sympathetic nervous system. He goes on to describe this involvement of the sweat glands as "teleologically unfortunate." This, Sir, raises a most interesting question. To dub this association as teleologically unfortunate is equivalent to saying to Nature: "You have arranged this wrongly. It would have been better if you had done it in another way." This attitude, surely is a negation of the idea of natural selection. Natural selection should ensure that no teleologically unfortunate arrangement survives (though of course vestigial organs may give trouble before they are finally extinguished); and I feel that any *apparent* inappropriateness of a natural system should be ascribed to an imperfection in our understanding of it rather than to an imperfection in Nature.

I am often reminded of my ignorance about the cause of sweating during anaesthesia—when it is often apparently unassociated with vasoconstriction—and I feel that we must try to find some more satisfying explanation.—I am, etc.,

Bristol. RONALD WOOLMER.

POINTS FROM LETTERS

Treatment of Acute Malaria

Dr. I. GORDON CAMERON (Nairobi) writes: The *Journal* of August 1 has just come to hand, with the illuminating letters from Sir Philip Manson-Bahr (p. 284) and Dr. R. Y. Taylor (p. 285) on the prophylaxis and treatment of acute malaria with special mention of pyrimethamine ("daraprim"). May I say how heartily I agree with both writers. . . . Recently I described in the *East African Medical Journal* (1953, **30**, 255) a case in which the patient was treated with four times the manufacturers' recommended dose of pyrimethamine and relapsed within 14 days, almost dying of malaria. My stand-by for the past 27 years has been quinine, and it mattered not whether the attacking plasmodium was benign, malignant, or quartan—the patient recovered. One had relapses—no matter; but one had no deaths.

Poliomyelitis and Wrapped Food

Dr. H. DALE BECKETT (Bridgend) writes: It is striking that in those countries where food hygiene is considered important the incidence of poliomyelitis is greatest. Scandinavia and the United States have for many years been subject to the scourge, and for the past few years we, who have recently taken to buying more wrapped bread than ever before, suffer badly too. The old argument that used to be heard against the policy of pasteurizing milk, that a number of subinfective doses may produce immunity, must again be considered.

The Anxiety State

Dr. R. MACDONALD LADELL (Scarborough) writes: It was a pleasure to see the anxiety state so ably dealt with by Dr. E. A. Bennet (*Journal*, September 5, p. 554). It seems to me, however, that Dr. Bennet could have gone further in his task of acting as liaison between the expert and the G.P. The conscientious practitioner may be left somewhat frustrated by the careful and circuitous approach advocated. I believe that the approach can be much more direct so that, with experience, the cases in need of specific reassurance and a word of advice can be detected and dealt with in a matter of minutes. The adolescent youth may complain of heart or lungs, but if the doctor goes straight to the point he will find that the actual worry concerns the possible physical and mental effect of "losses." When masturbation has become obsessive it is always because it has become linked with anxiety. It is then used for comfort as a child sucks a dummy. The youth who has been fighting a losing battle because he believes he is over-sexed and that he has lost his will-power is able to break the vicious circle once the subject has been rescued from the emotional bias which commonly obscures it. The adolescent girl who suffers and resents the domination of her parents is apt to be regressive in the same way, and will be correspondingly grateful if her "secret sin" is dealt with on a matter-of-fact plane. . . . Dr. Bennet would seem to suggest that the phobias can be classed with other anxiety states as regards first-aid treatment. I do not think this is so, although some of the causes of anxiety I have mentioned may be intensifying the phobia. A phobia is symbolic, and, as Dr. Bennet says, the reason is hidden in the unconscious. Such patients should therefore be referred to the expert.

Experimental Hypnosis

Dr. G. AMBROSE (London, W.1) writes: Professor A. Kennedy in his latest review of hypnosis (*Journal*, September 5, p. 546) uncovers some pertinent points confronting hypnotherapy in this country. Students can find no facilities for acquiring the art of hypnosis. Doctors mastering the technique find little scope for their knowledge, for sooner or later they may come up against ignorance and prejudice from their fellow practitioners. However, the solution seems simple. Teach the subject in medical schools, open clinics staffed by competent medical hypnotherapists, give adequate facilities for research, and produce a learned society attracting the best brains in the country. All this has already been accomplished in America.

Alcohol-induced Pain

Dr. H. PULLAR-STRECKER (Isleworth, Middx.) writes: Alcohol-induced pain in Hodgkin's disease as discussed by Dr. Jan G. de Winter (*Journal*, September 12, p. 604) and other chance observations of the kind may eventually help those engaged in study and prevention of alcoholism to find a physiological means of protecting their patients. There are quite a number of substances causing distaste (or disinclination) for alcohol or a dislike of it. Of these, hydrogen sulphide is particularly interesting (*Brit. J. Addict.*, 1949, **46**, 47), since it appears to produce a "natural" distaste for alcohol, in contrast to the enforced dislike produced by tetraethylthiuram disulphide ("antabuse").

Obituary

R. H. CROWLEY, M.D., F.R.C.P.

Early days in the medical branch of the old Board of Education are recalled by the death of Dr. R. H. Crowley, formerly senior medical officer of the Board, at Tewin, Hertfordshire, on September 25 at the age of 84.

Ralph Henry Crowley was born on February 11, 1869, the son of the late Mr. Alfred Crowley, of Croydon, and was educated at Brighton Grammar School and at Oliver's Mount School, Scarborough. Receiving his medical training at St. Bartholomew's Hospital, he qualified M.R.C.S., L.R.C.P. in 1893, taking the London M.B. in the same year. He proceeded to the M.D. in 1895, was elected a Member of the Royal College of Physicians of London three years later, and became a Fellow in 1930. After qualification he held the appointment of house-surgeon to out-patients at the Hospital for Sick Children, Great Ormond Street, and later became school medical officer under the Bradford education authority, which post he held until 1909, when he began his long association with the Board of Education. He married Miss Muriel Priestman, of Bradford, in 1902, and had two daughters.

[Elliott and Fry, Ltd., London

We are indebted to Dr. Robert Weaver for the following appreciation. When Sir George Newman died in 1948 many well-deserved tributes were paid to his work as the first Chief Medical Officer of the Board of Education. The school medical service owed him a very great deal. Behind the scenes in those days the unspectacular work was being done by Dr. (now Dame) Janet Campbell, Dr. Alfred Eichholz, and Dr. Ralph Crowley, and they brought to the task that practical experience of school medical problems and handicapped pupils which Newman lacked. Bradford had appointed a school medical officer as far back as 1893, and this post was held by Crowley when, in June, 1909, he was invited to join the recently established medical branch of the Board of Education. In 1924 he was appointed to the newly created post of senior medical officer of the Board, a position he held until he reached retiring age in 1933.

When the Ministry of Health was established in 1919 Newman became Chief Medical Officer of that Ministry as well as of the Board of Education, but the duties of the former post were so onerous that he had of necessity to leave the school medical service very largely in Crowley's hands. If there was one part of that service which Crowley wished to see developed above all others it was research. He realized what opportunities there were for clinical investigations in the schools and school clinics, and anyone who showed signs of wanting to do such work was sure of his whole-hearted encouragement and support. He had a great deal to do with the original investigations carried out directly on behalf of the Board—inquiries into problems of vision and hearing, mental defect, anthropometric data, and so on. His concern was not entirely with medical problems; he was as interested in the educational as in the physical development of the child, so that there was never any possibility of the school medical service being for him a mere organization for the ascertainment and cataloguing of defects.

Crowley seemed to be the perfect example of a healthy mind in a healthy body. It was impossible to imagine him ever being bored or depressed; his enthusiasms were boyish in their intensity, and to the very last day of his service with the Board he retained that keenness which was so characteristic of him. He always appeared to be much younger than his real age.

There can seldom have been anyone less self-seeking than Crowley. Official honours made no appeal to him, and when he had to make a decision his own interests were never considered. He gained the abiding affection of all who worked under him, for they knew they could trust him implicitly.

LEWIS G. GLOVER, M.D.

Dr. Lewis G. Glover, a former treasurer of the Royal Medical Benevolent Fund, died at his home at Hampstead on September 25 at the age of 85.

Lewis Gladstone Glover was born at Highbury on April 9, 1868, the youngest son of Sir John Glover, a well-known shipowner. He was educated at Highgate School and at St. John's College, Cambridge, gaining an exhibition and graduating B.A. in 1889, with a first-class in the Natural Sciences Tripos. From Cambridge he went to St. Bartholomew's Hospital and took the degrees of M.B., B.Chir. in 1892, proceeding to the M.D. three years later. After resident appointments at the Royal Hospital for Diseases of the Chest and the Victoria Hospital for Children, he became ophthalmic house-surgeon at St. Bartholomew's and thereafter retained a keen interest in ophthalmology. He then studied for a further six months at various clinics in Vienna. On his return to this country Glover settled in general practice at Hampstead, in the days when Hampstead General Hospital was staffed by general practitioners, of whom he became one of the most active. In 1898 he joined the late Dr. Ford Anderson in partnership. Glover retired in 1929, after more than thirty happy years of strenuous practice.

Meanwhile he had been a councillor in the Hampstead Borough Council and chairman of its public health committee. He became mayor of the borough in 1936 and was re-elected for a second term of office in the following year. A member of the British Medical Association for some fifty years, he served the Association both at Headquarters and locally with enthusiasm. He acted as one of the secretaries of the Section of Medical Sociology at the Centenary Meeting of the B.M.A. in 1932, and from 1934 to 1938 he was a member of the Central Council. He represented his Division at six Annual Representative Meetings and was chairman of the Division in 1922. He was also treasurer and later vice-president of the Metropolitan Counties Branch. Between the years 1932 and 1951 Glover was a member of a number of central committees, with the charities committee and the medical war relief fund committee heading the list for length of service. He was a foundation member and past president of the Hampstead Medical Society, and for many

years he was honorary treasurer of the Royal Medical Benevolent Fund. In the first world war he was in medical charge of the Artists Rifles Officers Convalescent Hospital at Hampstead. He was devoted to St. Bartholomew's Hospital, of which he was a governor. A devout Christian, for more than half a century he was a pillar of the Lyndhurst Road Congregational Church, and for many years was medical adviser to the London Missionary Society.

Glover was the beau-ideal of the general practitioner. Able, highly qualified, keeping himself up to date and in touch with all the worth-while changes in medical practice, he was kindness itself to his patients, always genial and, while scrupulous in details of treatment and diet, never hurried : his memory is treasured by many old patients. He was an accomplished flautist, delighted in the piano, and in his youth was an enthusiastic rider of the old " penny-farthing " bicycle. He was one of the first doctors in London to use a motor-car, a Darracq of 1903.

In 1897 he married Mildred, the daughter of his uncle, Dr. James Grey Glover, of Highbury, to whom he was devoted. This union of fifty-six years was a most happy one, and there were two children, a daughter (Mrs. Abercromby), who practises as an otolaryngologist in Liverpool, and a son. To them we offer our deep sympathy.—J. A. G.

C. B. GOULDEN, O.B.E., M.D., M.Chir., F.R.C.S.

We record with regret the death of Mr. C. B. Goulden at his home at Shepreth, Cambridgeshire, on September 20 at the age of 74. For some years he was surgeon-oculist to the Household of the late Queen Mary.

Charles Bernard Goulden was born on August 20, 1879, the eldest son of the late Mr. H. J. Goulden, a publisher and bookseller of Canterbury. He was educated at St. Edmund's College, Ware, and at Downing College, Cambridge, where he graduated B.A. in 1900. He completed his medical training at the Middlesex Hospital, winning the Freeman Scholarship and the Leopold Hudson Exhibition, and took the degrees of M.B., B.Chir. in 1904, in which year he also obtained the diploma of F.R.C.S. He proceeded to the M.Chir. a year later and to the M.D. in 1914.

Goulden was house-surgeon at the Middlesex Hospital in 1903–4 and at Moorfields from 1904 to 1907. His first consultant post, which he held from 1909 to 1919, was as ophthalmic surgeon to Oldham Royal Infirmary. He joined the R.A.M.C. in the first world war, and was on the staff of the ophthalmic centre at Boulogne, where he worked with Sir William Lister, J. F. Cunningham, and M. H. Whiting until he was posted as ophthalmic surgeon in charge of the centre at Rouen. For his services there he was mentioned in dispatches, and in 1919 he was appointed O.B.E.

His exceptional ability was so much appreciated by his colleagues during the war that in 1919 he was elected to the staffs of the London Hospital and Moorfields, and at the latter he became dean of the medical school. From 1937 to 1948 he was surgeon-oculist to Queen Mary's Household, and in the last war he served as ophthalmic consultant to the Ministry of Health. He was also consultant in ophthalmology to the Ministry of Pensions and consultant ophthalmic surgeon to the London Hospital, the Queen Alexandra Military Hospital, Millbank, St. Vincent's Orthopaedic Hospital at Eastcote in Middlesex, and to the Hostel of St. Luke, as well as to Moorfields.

He was president of the Ophthalmological Society of the United Kingdom from 1944 to 1946, president of the section of ophthalmology of the Royal Society of Medicine in 1948–9, and an honorary member of the French and Mexican ophthalmological societies. When the British Medical Association held its Annual Meeting at Dublin in 1933 he served as a vice-president of the Section of Ophthalmology. He was Montgomery Lecturer of the Royal College of Surgeons in Ireland in 1926 and again in 1932, and was an examiner in ophthalmology for the University of London, the Royal College of Surgeons of England, and the London Conjoint Board. His publications included a textbook on refraction, and a translation, with Clare Harris, of Koby's *Slit Lamp Microscopy of the Living Eye.*

Mr. Arthur Lister writes: The above outline of Charles Goulden's career gives an indication of his scholarship, his professional eminence, and the respect in which he was held by those with whom he worked. He was an acute observer, and a first-class clinician and operator. He was always receptive of new ideas, and he was among the first to bring Gonin's detachment operation to England. But his greatest gift was for teaching, in which a combination of enthusiasm, common sense, simplicity of expression, and a power to temper criticism with kindliness made him perhaps unique in his generation. Two remarks of his are characteristic: a junior colleague had completed an operation successfully, but more by good luck than good management. His bubble of satisfaction was quickly pricked by Goulden saying, " Yes, but you did not do what you meant to do." When the same colleague committed a technical blunder and asked Goulden if he had ever done the same, Goulden replied, " I have done everything I should not have done." His praise of good work was unstinted, and he delighted in technical excellence.

Though not physically robust, Goulden was blessed with untiring energy. Thus, during the last war, when he was past the age of retirement, he carried on at the London and Moorfields, operated weekly at Brentwood, Chase Farm, and Goodmayes, and organized the E.M.S. ophthalmic services with undiminished zest and vigour. His enthusiasm and kindness, his sense of humour without malice, and his interest in a wide variety of subjects made him a most charming and lovable companion. He delighted in music, pictures, and cricket, but especially the first, and he said once that music was his chief interest in life but he did ophthalmology for a living. At Boulogne in the first world war the male voice choir which he organized and trained proved a blessed relaxation to his friends and colleagues during those anxious and sombre days.

His retirement, which he deserved and which he could have enjoyed to the full at his home at Shepreth, was marred by serious illness, but his spirit remained undaunted; on the night before a serious operation, after giving vent to a slightly unkind remark, he said with a smile, " Fancy saying that on the brink of eternity." Ophthalmologists all over the world who have listened to him owe him much, and the lives of his many friends are the richer because of him. He is survived by his widow, formerly Miss Norah O'Brien, whom he married in 1911.

Dr. H. H. Cavendish Fuller, chief medical officer to the former Railway Executive, died in St. Mary's Hospital, Paddington, on September 30 at the age of 66. Hugh Hercus Cavendish Fuller was born in 1887 and was educated at Bishop's Stortford and at Edinburgh University, where he graduated M.B., Ch.B. in 1912. He proceeded to the M.D. in 1931. On the outbreak of war in 1914 he entered the R.A.M.C. and served at home and overseas as medical officer attached to the Royal West Kent Regiment until 1917, when he settled in general practice at Malvern. He was then appointed medical officer to Malvern College, a position he held until 1930, and he also became honorary consulting surgeon to Great Malvern Hospital and medical

referee to the Ministry of Pensions for the Malvern area. Dr. Cavendish Fuller was appointed assistant medical officer to the old Great Western Railway in 1930 and in the following year he became chief medical officer. In addition, he was, until war broke out again in 1939, chief clinical assistant to the National Hospital for Diseases of the Heart, clinical assistant to the British Red Cross Clinic for Rheumatism, Peto Place, and medical officer for Channel Islands Airways. During the last war he was responsible for the medical arrangements for the evacuation of children and for air raid casualties at Paddington. He also held the rank of lieutenant-colonel in the Home Guard. In 1948 he was appointed medical adviser to the Railway Executive, while continuing his duties as Western Region medical officer at Paddington, and a year later he became chief medical officer to the Railway Executive. By a sad coincidence his death occurred on the last day of the official existence of the executive.

Medico-Legal

DIABETES AND DRIVING LICENCES

[From our Medico-Legal Correspondent]

S. 5 of the Road Traffic Act, 1930, provides that on application for the grant of a driving licence the applicant must make a declaration in the prescribed form "as to whether or not he is suffering from any such disease or physical disability as may be specified in the form, or any other disease or physical disability which would be likely to cause the driving by him of a motor vehicle, being a vehicle of such a class or description as he would be authorized by the licence to drive, to be a source of danger to the public."

The specified diseases and disabilities are contained in Regulation 5 of the Motor Vehicles (Driving Licences) Regulations, 1950, and are: epilepsy; any form of mental disorder or mental defect as a result of which either the applicant is certified or duly ascertained as subject to be placed under statutory supervision or the applicant's estate is in the hands of a receiver, curator bonis, or judicial factor; liability to sudden attacks of disabling giddiness or fainting; and inability to read at a distance of 25 yards in good daylight six white letters and figures on a black ground of the size and arrangement prescribed for number-plates.

In the case of other disease or disability than the specified diseases and disabilities, s. 5 of the Road Traffic Act provides that the applicant can claim a driving test, and if he passes it his licence is not to be refused solely on the grounds of the disease or disability. If he has previously passed such a test, a further test shall not be required unless it is apparent from his declaration or from information received by the licensing authority that his previous disease or disability has become more acute or that he has developed a new one. In the case of the specified diseases or disabilities, and in the case of other diseases or disabilities likely to cause dangerous driving unless the applicant has claimed and successfully passed a test, the licensing authority is obliged to refuse to grant a driving licence.

Failure by an applicant to disclose that he suffers from diabetes has been made the subject of prosecution for making a false statement in order to obtain a driving licence. Diabetes is not a disease specified under the 1950 regulations. Whether it is a disease which in the words of s. 5 of the Road Traffic Act, 1930, "would be likely to cause the driving by him of a motor vehicle to be a source of danger to the public" is a question on which different views might well be held. The common-sense answer appears to be that, if the sufferer appreciates the risk of hypoglycaemia and has been told by his doctor how to recognize the imminence of attacks and to avoid them by carrying biscuits or sugar or glucose, his diabetes is not likely to be a source of danger. Law and common sense look as if they are in accord.

Vital Statistics

Poliomyelitis

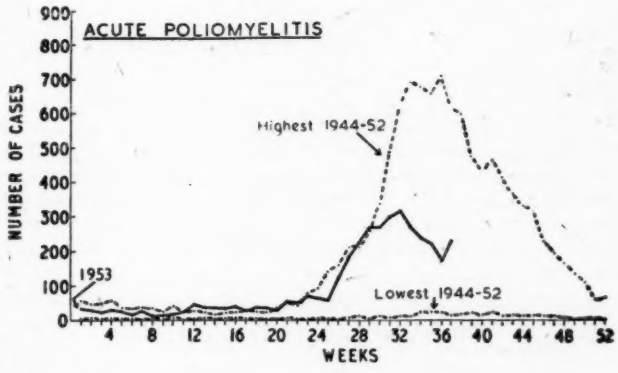
Poliomyelitis notifications (uncorrected) in the week ending September 26 (38th week of the year) were as follows: paralytic, 119 (123); non-paralytic, 99 (104); total, 218 (227). This is a decrease of 9 compared with the previous week, the figures for which are in parentheses. This is small, and the autumn fall in poliomyelitis notifications towards the winter levels is slower than might be hoped for.

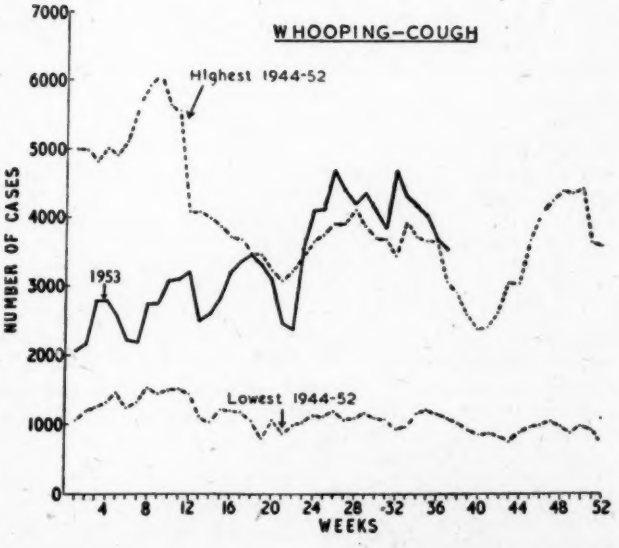
Week Ending September 26

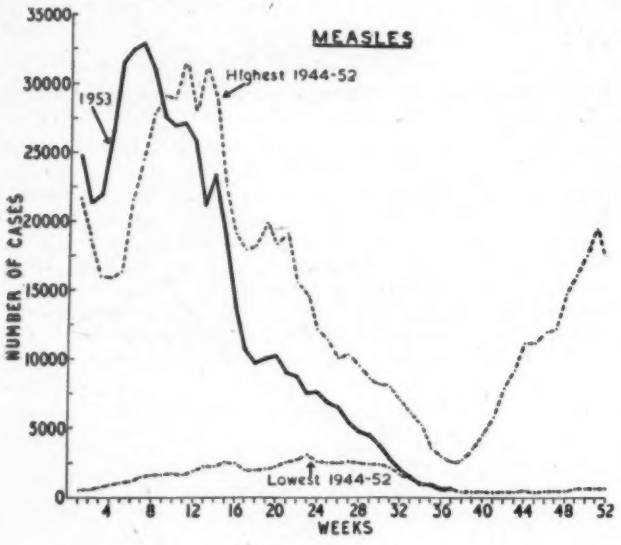
The notifications of infectious diseases in England and Wales during the week included scarlet fever 786, whooping-cough 2,771, diphtheria 29, measles 492, dysentery 263, paratyphoid fever 13, typhoid fever 6.

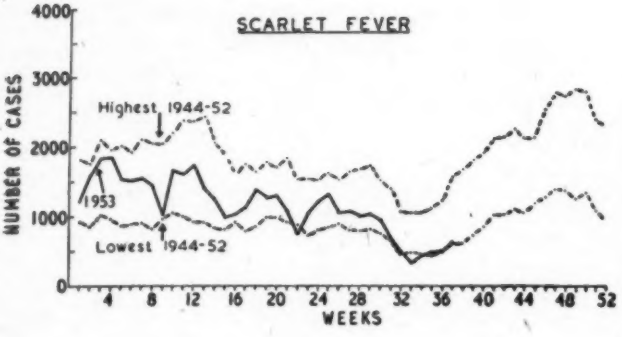
Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the nine years 1944–52 are shown thus - - - - - - -, the figures for 1953 thus ———. Except for the curves showing notifications in 1953, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.









Infectious Diseases

The largest variations in the trends of infectious diseases in England and Wales during the week ending September 19 were an increase of 128 in the number of notifications of scarlet fever, from 505 to 633, and a decrease of 153 for whooping-cough, from 3,708 to 3,555.

Only small fluctuations occurred in the local trends of scarlet fever, with the exception of a rise of 34 in Yorkshire West Riding, from 54 to 88. The largest variations in the returns of whooping-cough were a rise of 57 in the number of notifications in Yorkshire West Riding, from 260 to 317, and a fall of 54 in Southampton County, from 162 to 108. 608 cases of measles were notified, 5 more than in the preceding week, and no changes of any size were reported in the local trends. 25 cases of diphtheria, an increase of 6 on the preceding week, were notified. The chief features of the returns for diphtheria were rises in Lancashire from 4 to 7 and in Durham from 0 to 4.

227 cases of acute poliomyelitis were notified during the week. These cases were 31 more for paralytic and 23 more for non-paralytic cases than in the preceding week. The largest returns were Warwickshire 29 (Coventry C.B. 15, Birmingham C.B. 7), London 22 (Lewisham 4, Wandsworth 3, Woolwich 3), Lancashire 20 (Manchester C.B. 6, Liverpool C.B. 4, Preston C.B. 4), Yorkshire West Riding 16 (scattered through 12 administrative areas), Northamptonshire 15 (Kettering M.B. 14), Surrey 13 (Reigate M.B. 4).

The notifications of dysentery have been almost constant during the past month. 202 cases, 2 fewer than in the preceding week, were notified. The largest returns were Lancashire 35 (Farnworth M.B. 12), London 30 (Chelsea 7), Yorkshire West Riding 30 (Bradford C.B. 10), Middlesex 20, and Warwickshire 14 (Birmingham C.B. 12).

73 cases of diarrhoea and enteritis in children aged under 2 were notified in Eire; 57 of these occurred in Dublin C.B.

INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **September 19** (No. 37) and corresponding week 1952.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1953					1952				
	Eng & Wales	Lond	Scot	N Ire	Eire	Eng & Wales	Lond	Scot	N. Ire	Eire
Diphtheria	25	1	5	1		26	3	9	0	1
Dysentery	202	30	94	4	4	100	23	90	4	1
Encephalitis, acute	4	0	1	0		2	0	0	0	
Enteric fever:										
Typhoid	6	0	0	0		9	0	0	3	2
Paratyphoid	8	1	2(B)	0	1(B)	64	0	2(B)	0	
Food-poisoning	280	88		1		105	13		0	
Infective enteritis or diarrhoea under 2 years				14	73				19	47
Measles*	608	16	59	16	24	2,421	240	56	24	62
Meningococcal infection	12	1	14		1	26	0	4	0	3
Ophthalmia neonatorum	27	5	11	0		29	2	10	1	
Pneumonia†	206	13	109	7		210	13	149	0	
Poliomyelitis, acute:										
Paralytic	123	13	14	18	10	115	6	6	11	2
Non-paralytic	104	9				68	5			
Puerperal fever§	251	42	11	2		203	33	12	1	
Scarlet fever	633	29	153	20	38	701	71	175	10	43
Tuberculosis:										
Respiratory			135	22				119	37	
Non-respiratory			21	6				24	14	
Whooping-cough	3,555	281	313	21	42	1,487	90	95	27	46

DEATHS in Great Towns	1953					1952				
	Eng & Wales	Lond.	Scot	N Ire	Eire	Eng & Wales	Lond	Scot	N. Ire	Eire
Diphtheria	0	0	0	0	0	1	0		0	0
Dysentery	0	0		0		0	0		0	
Encephalitis, acute		0			0		0			0
Enteric fever	0	0	0	0		1	0		0	
Infective enteritis or diarrhoea under 2 years	9	1	0	2	1	7	1	2	2	2
Influenza	1	0	0	0	0	2	1		0	0
Measles		0	0	0	0		0		0	0
Meningococcal infection		1	0				0	1		
Pneumonia	116	20	13	8	5	97	13		4	4
Poliomyelitis, acute	2	0			0	6	0			0
Scarlet fever		0	0	0	0		0		0	0
Tuberculosis:										
Respiratory	83	6	9	2	3	86	12	13	5	3
Non-respiratory		2	2	0	2		0	0	1	1
Whooping-cough	1	0	2	0		1	0		0	0
Deaths 0–1 year	174	22	20	6	18	170	19	26	7	15
Deaths (excluding stillbirths)	4,236	606	496	85	128	4,091	600	475	93	126
LIVE BIRTHS	7,010	1019	820	233	390	6,907	1057	829	205	488
STILLBIRTHS	171	28	19			176	19	18		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Medical News

Sir Godfrey Huggins, C.H., surgeon and administrator, became the first Prime Minister of the Federation of Rhodesia and Nyasaland when, on September 7, he accepted the Governor-General's invitation to form a temporary Ministry. The Ministry has the task of setting up a new government machine and of preparing the initial electoral law under which the Federation's first Assembly will be elected. In addition to the premiership, Sir Godfrey Huggins assumed the portfolios of Finance, External Affairs, and Defence. Sir Godfrey received his medical education at St. Thomas's Hospital.

Middlesex Hospital Medical School Dinner.—The annual dinner of past and present students was held at the Savoy Hotel, London, on October 2, with Mr. C. P. Wilson in the chair. In proposing a toast to the hospital and the school the chairman said that the past year had been an eventful one for the Middlesex, and a year which found them as youthful and progressive as they had ever been. H.M. the Queen had agreed to become their Patron, thereby continuing an unbroken tradition of more that 130 years. He paid a tribute to Canada's generosity in making a gift to Britain of a unit of cobalt-60, the most powerful radioactive substance yet known, for the treatment of malignant disease. The unit had been installed at Mount Vernon Hospital, Northwood. (A description of the unit was given in the *Journal* of March 21, p. 669; it was stated to have cost over £25,000.) Sir Harold Boldero, Dean of the Medical School, spoke of his great faith in the new Institute of Clinical Research, and said that he wished them to realize how it had developed from an ideal to a reality. The board of governors had decided willingly to spend a considerable proportion of the endowment fund on research, and it had been agreed that there should be an institute in which practising physicians and surgeons could undertake research requiring laboratory facilities. The difficulty remained, however, as to where this could be situated. A house to the north of the school had come into the market, but the B.B.C., whose need for accommodation was very real, was interested in it also. He hoped it would not be forgotten that the fact that the hospital had succeeded in becoming the freeholders of the property was due to the B.B.C.'s Director-General of the day, Sir William Haley, who had taken the line that the needs of research at Middlesex Hospital were paramount. Dr. C. G. H. Newman, Senior Broderip Scholar, also replied to the toast, and the health of the chairman was given on the proposition of Professor B. W. Windeyer.

Medical Defence Union.—Presenting the report and accounts (*Journal*, August 29, p. 504) at the annual meeting of the Medical Defence Union last month, the president, Dr. S. Cochrane Shanks, commented on the rising tide of litigation that besets the medical profession. "In the past, a patient might hesitate to sue a voluntary hospital or a doctor who gave his services free." It was not the case now, he said. The three defence unions were at present negotiating with the Ministry on the subject, with the object of defending unwarranted actions together and of settling just claims in amicable agreement. Two committees had been set up by the council of the Union during the last year—one to report on injection routine in operating theatres and the other, in conjunction with the Association of Anaesthetists, on anaesthetic explosions. The first had completed its work.

Hospital Catering.—"It is evident to all, certainly to the hospital population, that there is, here and there, room for improvement in hospital feeding," said Dr. Charles Hill, Parliamentary Under-Secretary to the Ministry of Food, speaking at the School of Hospital Catering in the grounds of St. Pancras Hospital, London, on September 30. Not only was there room for improvement in the more scientific field of calories and proteins and vitamins, but even more in the presentation and serving of food. King Edward's Hospital Fund for London, in providing the school, Dr. Hill continued, had discovered a valuable and very human way of using some of its resources. He hoped that management committees would take the fullest advantage of the opportunity to send their staffs to the courses of instruction offered. The activities of the school were on display for the many visitors who attended the demonstration. Sample meals for different diets were graded by cost, but had the same nutritional content. In the advisory service department statistics had been worked out for the labour and cost involved in various aspects of hospital catering. This department also offers expert advice on the equipment of kitchens. Refresher courses for the different grades of catering personnel are provided at the school, as well as one-year courses for new entrants into this occupation. Some bursaries are available.

Malaria in Asia.—The permanent elimination of malaria from regions where nearly a quarter of the world's population live was the theme of W.H.O.'s first Asian Conference on Malaria, which ended in Bangkok on September 29. The Conference was attended by delegates from 20 nations. The main conclusion of the Conference, supported by much evidence from local malaria prevention schemes and likely to appeal strongly to governments, is that efficient malaria prevention pays handsome dividends. In one area of Thailand with a population of 280,000 it is estimated that 175,000 man-days of labour were saved after a single year of control work.

Employment of the Severely Disabled.—The Ministry of Labour and National Service has offered local authorities financial help in providing sheltered employment for severely disabled persons. Until now such assistance has been limited to those who are blind. The Ministry offers grants of up to 75% of the capital cost of providing new workshop accommodation and grants towards losses incurred in running them. This should allow the industrial resettlement of any capable of factory work who are not already being assisted either by voluntary agencies or in Remploy factories.

Nuffield Gerontological Research Fellowships.—Because of the high quality of the candidates applying for a Nuffield Research Fellowship for work on the scientific aspects of ageing, the Foundation has decided to award two Fellowships instead of one as originally intended. This has necessitated increasing the sum set aside for this purpose from £25,000 to £51,000. Dr. P. L. Krohn, Reader in Endocrinology at Birmingham University, has been elected to a five-year professorial research fellowship, and Dr. D. A. Hall, Lecturer in Medical Biochemistry at Leeds University, to a three-year research fellowship of less senior status. Dr. Krohn will analyse the causes of ageing. Dr. Hall will study the changes in connective tissue.

Liverpool Medical Institution.—Over 400 members and guests attended the inaugural meeting on October 1, when Mr. J. B. Oldham delivered his presidential address on "The Founders of our Library." Mr. Oldham described the lives of these men who, 180 years ago, started the library from which the Liverpool Medical Institution had arisen, and gave an account of the times and the town in which they lived. Professor N. B. Capon proposed the vote of thanks to the president.

Family Doctor.—The October issue contains articles on "Television for Children" (by C. A. Lejeune), rupture, and infant feeding (by Dr. Ursula Shelley). Other medical subjects discussed are the mechanism of heredity, spectacles, and catarrh. There is the usual batch of medical "Any Questions?" from the lay, ranging from "Can gallstones be dissolved?" to a note on a condition called "Jack Hulbert Jaw." Dr. J. G. Coburn writes on barrier creams and the kitchen sink.

Chair of Surgery at Durham.—Mr. A. G. R. Lowdon, senior lecturer in surgery at Edinburgh, has been appointed to the chair of surgery at Durham University. During the last world war Mr. Lowdon served as a surgeon with the Eighth Army in North Africa and Sicily, and with the British

Liberation Army in Europe. Since the war he has been working with Sir James Learmonth in Edinburgh.

Sir George H. Henderson is retiring this month from his position as Secretary of the Department of Health for Scotland. He will be succeeded by Mr. Harold Ross Smith.

Sir Rudolph Peters, F.R.S., Whitley Professor of Biochemistry at Oxford, received the degree of doctor of science of the University of Cincinnati at a special convocation ceremony there last month.

Distribution of Medical Films.—The British Film Institute and the medical committee of the Scientific Film Association are prepared to make arrangements for the distribution of approved medical films if the owners of the films are unable to do it themselves. Anyone wishing to avail himself of this offer is invited to lend a copy of his film to the distribution officer, British Film Institute, 4, Great Russell Street, London, W.C.2. The film will be viewed by members of the medical committee, and, on their recommendation, a copy will be made and the original returned. The film will then be available for hire from the film library of the British Film Institute, the copyright, however, remaining with the owner.

COMING EVENTS

West End Hospital for Nervous Diseases.—Clinical demonstrations in neurology will take place every Tuesday at 5.30 p.m. from October 13 until December 15 at the Outpatient Department, 40, Marylebone Lane, London, W.1. The demonstrations are open to postgraduates, medical practitioners, and senior medical students.

Guild of St. Luke, SS. Cosmas and Damian.—The annual mass and communion will take place on St. Luke's Day, Sunday, October 18, at 8.30 a.m. in the crypt of Westminster Cathedral.

Medical Society for the Care of the Elderly.—A general meeting will be held at the City Hospital, Nottingham, on October 22 and 23.

Wessex Rahere Club.—The autumn dinner of the club will take place at the Lansdown Grove Hotel, Bath, on October 24. Membership is open to all Bart's men practising in the West Country. Further details may be obtained from the hon. secretary, Mr. A. Daunt Bateman, 11, The Circus, Bath.

British Association of Physical Medicine.—A postgraduate course in physical medicine will be held on Saturday mornings from October 31, 1953, to January 23, 1954, at various London hospitals. The fee for the course is two guineas. Further particulars can be obtained from the honorary secretary of the association, 45, Lincoln's Inn Fields, London, W.C.2.

NEW ISSUES

Abstracts of World Medicine.—The October issue (Vol. 14, No. 4), which is now available, contains abstracts of important papers on both medical and surgical subjects drawn from journals published in some 20 different countries and in all five continents. In addition to the various branches of clinical medicine and surgery, the subjects covered include pathology, bacteriology, pharmacology, and chemotherapy, and there are also sections dealing with medical genetics, industrial medicine, anaesthetics, radiology, and the history of medicine.

Issued monthly; annual subscription £4 4s., single copy 8s. 6d.; a specimen will be sent free on request.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Applications should be made first to the institution concerned.

Sunday, October 11

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.—At Adolph Tuck Hall, Woburn House, W.C., 3 p.m., Presidential address by Mr. Albert Davis: Some Obstetric and Gynaecological Curiosities.

Monday, October 12

●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Chelsea Hospital for Women, 4.30 p.m., Mr. R. H. Boyd: Contraception.

LONDON UNIVERSITY.—At University College Hospital Medical School, 5.30 p.m., Special University Lecture in Pathology by Professor E. G. D. Murray (Montreal): Surmise on Some Trends in Bacteriology.

MEDICAL SOCIETY OF LONDON.—8.30 p.m., general meeting. Presidential Address by Mr. E. W. Riches: Significance of Haematuria.

●POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. W. S. C. Copeman: Treatment of the Rheumatic Diseases with Cortisone and A.C.T.H.

●ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5.15 p.m., Mr. J. Cosbie Ross: Management of the Bladder in Spinal Injury; 6.30 p.m., Mr. D. H. Patey: Surgery of the Parotid Gland.

●WESTMINSTER MEDICAL SCHOOL.—At Church House, Great Smith Street, 3 p.m., Inaugural Address by Lord Radcliffe.

Tuesday, October 13

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, 5.30 p.m., Professor R. W. Russell: Experimental Psychopathology.

CHELSEA CLINICAL SOCIETY.—At South Kensington Hotel, 41, Queensgate Terrace, S.W., 7.30 p.m., dinner, followed by a discussion: The M'Naghten Rules, to be opened by Sir Ernest Gowers, Dr. Desmond Curran, and Dr. Eliot Slater.

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. C. O. Carter: Genetics in Dermatology.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.—5 p.m., Second Dorothy Platt Memorial Lecture by Professor E. C. Dodds, F.R.S.: Recent Knowledge of the Endocrine Background of Malignant Disease.

MANCHESTER MEDICAL SOCIETY: SECTION OF SURGERY.—At Medical School, Manchester University, 8 p.m., Presidential Address by Mr. O. M. Duthie: Retinal Detachment.

●ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5.15 p.m., Mr. William Gissane: Major Injuries of the Hand—Open and Closed; 6.30 p.m., Sir Harry Platt: Tumours of Bone.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—At Wright-Fleming Theatre, 5 p.m., Mr. G. F. Gibberd: Management of Disproportion.

Wednesday, October 14

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. I. Whimster: Developmental Anomalies.

LIVERPOOL MEDICAL INSTITUTION.—8 p.m., symposium to be opened by Professor Andrew Wilson: Use and Abuse of Antibiotics.

MANCHESTER MEDICAL SOCIETY: SECTION OF PATHOLOGY.—At Medical School, Manchester University, 4.30 p.m., symposium on Transfusion Problems by Dr. R. F. Jennison and Dr. F. Stratton, followed by a discussion.

MIDLAND MEDICAL SOCIETY.—At Queen's Hotel, Birmingham, 8.15 p.m., annual dinner and inaugural meeting.

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—2 p.m., Professor A. C. Frazer: Normal and Defective Fat Absorption.

●ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5.15 p.m., Professor C. G. Rob: Arterial Aneurysms; 6.30 p.m., Mr. E. T. C. Milligan: Surgery of the Anal Canal.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE.—4 p.m., Bengué Memorial Award Lecture by General A. M. E. Sicé (Basle): Evolution of Therapeutics in the Course of the Last Few Years (Illustrated).

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—At Wright-Fleming Theatre, 5 p.m., lecture-demonstration by Dr. J. D. W. Pearce: Psychological Medicine.

●SCHOOL OF PHARMACY.—At Beveridge Hall, Senate House, 3 p.m., inaugural address by Sir Henry Cohen.

Thursday, October 15

BRITISH INSTITUTE OF RADIOLOGY.—8 p.m., Presidential Address by Mr. Cuthbert Andrews: The Industry and the Institute.

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, 5.30 p.m., Dr. C. J. Popják: Biological Synthesis.

CHADWICK TRUST.—At Royal Society of Arts, 5.30 p.m., public lecture by Mr. C. J. Regan: Air Pollution.

EDINBURGH CLINICAL CLUB.—At 7, Drumsheugh Gardens, 8 p.m., Dr. Douglas Miller: Common Obstetrical Injuries and their Sequelae.

EPSOM AND SUTTON INTER-HOSPITAL PSYCHIATRIC ASSOCIATION.—At Cane Hill Hospital, Coulsdon, Surrey, 8 p.m., annual meeting. Dr. Alexander Walk: Royal Commission on Marriage and Divorce; Dr. F. B. E. Charatan: Psychiatric Aspects of Pulmonary Neoplasm.

●INSTITUTE OF CHILD HEALTH AND INSTITUTE OF NEUROLOGY.—At National Hospital, Queen Square, W.C., 5.30 p.m., Dr. A. P. Norman: Aetiological Factors of "Congenital" Group (Kernicterus, Birth Trauma, Anoxia, Developmental Abnormality).

NORTH-WESTERN TUBERCULOSIS SOCIETY.—At Manchester Royal Infirmary, 5 p.m., presidential address by Mr. F. Ronald Edwards: Recent Trends in Pulmonary Surgery.

ROYAL ARMY MEDICAL COLLEGE.—5 p.m., Dr. W. R. Bett: Truants from Medicine (with lantern slides).

●ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5.15 p.m., Mr. T. Holmes Sellors: Surgery of the Pericardium; 6.30 p.m., Mr. Geoffrey L. Keynes: Parathyroid Surgery.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—7.30 p.m., presidential address by Dr. Norman White.

ST. ANDREWS UNIVERSITY.—At Physiology Department, Dundee, 5 p.m., Professor O. Wyss (Zurich): Organization of the Respiratory Centre.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—5 p.m., Dr. Desmond Curran: psychiatry demonstration.

SOCIETY OF CHEMICAL INDUSTRY: MICROBIOLOGY GROUP.—At Medical Society of London, 6.15 p.m., Dr. E. F. Gale: Actions of Antibiotics in the Bacterial Cell.

Friday, October 16

FACULTY OF RADIOLOGISTS.—At Royal College of Surgeons of England, 2.15 p.m., Diagnosis Section Meeting. Dr. J. W. Pierce: Pulmonary Manifestations of Fungous Diseases.

INSTITUTE OF DERMATOLOGY.—5.30 p.m., clinical demonstration by Dr. J. E. M. Wigley: Eczema.

INSTITUTE OF NEUROLOGY.—5 p.m., Dr. Paul Bucy (U.S.A.): Cervical Hypertrophic Pachymeningitis—Diagnosis and Treatment.

LONDON UNIVERSITY.—At Guy's Hospital Medical School, 5 p.m., Professor William Montagna (Brown University): The Architecture, Growth, and Differentiation of Skin.

●POSTGRADUATE MEDICAL SCHOOL OF LONDON.—12 noon, Dr. A. Rae Gilchrist: Coronary Sclerosis; 4 p.m., Sir Neil Hamilton Fairley, F.R.S.: Schistosomiasis.

●ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS.—2.45 p.m., William Meredith Fletcher Shaw Memorial Lecture by Mr. J. W. Bride: Some Manchester Pioneers in Obstetrics and Gynaecology.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—3 p.m., Harveian Oration by Dr. George Graham: Value of Physiology in Medicine.

Saturday, October 17

BIOCHEMICAL SOCIETY.—At Westminster Medical School, 11 a.m., 322nd meeting, scientific papers.

APPOINTMENTS

DUMMER, F. H. M., M.B., Ch.B., C.P.H., D.P.H., Medical Officer of Health, Borough of Andover, Rural Districts of Andover, Whitchurch and Kingsclere, Hants.

FISHER, MARGARET L., M.B., B.Ch., House-physician to Neurological and Neurosurgical Department, Hospital for Sick Children, Great Ormond Street, London, W.C.

GRANT, DONALD KERR, M.B., B.S., M.R.A.C.P., House-physician, Hospital for Sick Children, Great Ormond Street, London, W.C.

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BIRTHS, MARRIAGES, AND DEATHS

MARRIAGES

Horne—Mackenzie.—On September 30, 1953, at King's College Chapel, Aberdeen, James Landess Horne, M.D., D.P.H., of Maybank, Strathpeffer, to Margaret Marian Mackenzie, M.B., Ch.B., of Croit Mhairi, Tain, Ross and Cromarty.

DEATHS

Farr.—On August 29, 1953, at 5, Burnham Gardens, Bognor Regis, Sussex, Arthur Farr, M.R.C.S., L.R.C.P., late of Kensington, London, W., aged 79.

Kilkelly.—On July 14, 1953, in Kenya, Charles Randolph Kilkelly, C.M.G., M.V.O., M.B., B.Ch., D.P.H., Surgeon Lieutenant-Colonel, Grenadier Guards, retired, late of Drimcong, Moycullen, Co. Galway, Ireland, aged 93.

King.—On September 3, 1953, near Bath, Somerset, Lorna Susan King, M.B., B.S., formerly of Bromley, Kent.

McHugh.—On September 8, 1953, at his home, 101, Withington Road, Manchester, Louis Joseph Edward McHugh, M.B., B.Ch., aged 78.

MacLennan.—On September 8, 1953, at All Saints' Hospital, Chatham, Kent, Kenneth Falconer Macrae MacLennan, M.B., Ch.B.

Napier.—On September 10, 1953, George Napier, M.B., Ch.B., D.P.H., of Salisbury, Wilts.

Newton.—On August 31, 1953, at 4, Walden Road, Welwyn Garden City, Herts, Hallé Newton (formerly Marsten), M.R.C.S., L.R.C.P.

Nicoll.—On August 30, 1953, Henry Maurice Dunlop Nicoll, M.B., B.Ch., of Great Amwell House, Ware, Herts, and 146, Harley Street, London, W., aged 69.

Robertson-Ross.—On September 7, 1953, at "Laurel Trees," West Coker, Som., James Ewen Robertson-Ross, L.M.S.S.A., aged 63.

Taylor.—On September 2, 1953, Maud Taylor, M.D., late of Godfrey's Farm, Radwinter, Essex.

Teasdale.—On August 26, 1953, at his home, West Retford House, Retford, Notts, John Cambridge Teasdale, M.B., Ch.B., aged 75.

Wallace.—On August 22, 1953, at St. Thomas's Hospital, Godalming, Surrey, John Wallace, O.B.E., T.D., M.D., Colonel, R.A.M.C. (T.), retired.

Will.—On September 7, 1953, whilst on holiday, Ella, Kennedy Will, M.R.C.S., L.R.C.P., of 1, Winsford Terrace, Edmonton, London, N.

Zuckermann.—On September 29, 1953, Ernst Zuckermann, M.D., of 14, Oxford Street, Nottingham.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Pain on Ejaculation

Q.—*A man of 48 has suddenly developed pain in the glans penis on ejaculation. There is no history or evidence of genito-urinary disease. What is the likely cause, and what treatment is advised?*

A.—In this case the pain in the glans penis is almost certainly referred from the prostate or vesicles. These structures must therefore be carefully investigated for signs of infection; the secretion expressed by prostatic and vesicular massage should be examined for pus cells, and the urine voided subsequently for the presence of threads. A small concretion in the prostate might also cause pain on ejaculation. If no physical lesion can be found the possibility of the pain being psychogenic must be considered. A husband who is unable to satisfy his wife sexually sometimes falls back on pain as an excuse for this. Diathermy treatment, using rectal and suprapubic electrodes, is often helpful.

Which Barbiturate?

Q.—*How do the various official barbiturate preparations differ in action, effective dose, rate of elimination, and toxicity?*

A.—This topic often occupies a whole chapter in a modern textbook of pharmacology, but a good and succinct account will be found in the *National Formulary*, 1952.

The duration of action of a barbiturate depends upon its rate of degradation by the liver, absorption by other tissues, excretion by the kidney, on the rate and route of administration, and also upon the dose given. In general the long-acting barbiturates take effect more slowly that the short-acting ones when given orally. It is usual to classify the substances according to their duration of action as long-, medium-, and short-acting drugs. Barbitone and its sodium salt are almost entirely removed by renal secretion, and a single dose may be effective for 12 hours or more. This substance may be detectable in the urine for several days after a single dose. Phenobarbitone and methylphenobarbitone are partly excreted by the kidneys and partly broken down in the liver. All these substances are slowly eliminated and cumulation may occur, especially if renal function is poor. Medium-acting barbiturates such as pentobarbitone sodium and quinalbarbitone sodium are more rapidly metabolized by the liver, while the short-acting thiopentone sodium is probably dealt with by most tissues including liver. The barbiturates mentioned above are official in the *B.P.* (1953), but of these only phenobarbitone and quinalbarbitone are widely used. The *B.P.C.* (1949) includes also the medium-acting allobarbitone, amylobarbitone, and butobarbitone, and the short-acting cyclobarbitone and hexobarbitone. The use of the last-named is, however, dying out in Britain.

The actions of barbiturates vary from sedation, for which some like phenobarbitone are specially suitable, to full anaesthesia. With some compounds such as cyclobarbitone most stages between these two extremes can be usefully obtained by varying the dosage. The short-acting thiopentone sodium is commonly given by intravenous injection. Doses used obviously vary according to the effect desired. Phenobarbitone is used as a sedative in doses of 30–120 mg. (½–2 gr.) and barbitone as a hypnotic in doses of 0.3 to 0.6 g. (5–10 gr.). Medium acting barbiturates are often given in doses of 90–180 mg. (1½–3 gr.) for hypnosis; cyclobarbitone is used in double these amounts, while quinalbarbitone

sodium may be useful in doses as low as 45 mg. (¾ gr.) for insomnia or temporary hypnotic action. Patients vary in sensitivity and it is impossible to define dosage accurately. Large doses of the long-acting compounds are unsuitable as hypnotics as their effect persists for too long.

The toxicities of the barbiturates roughly parallel their therapeutic doses, the therapeutic ratio for all being about the same. Phenobarbitone and methyl phenobarbitone have the additional property of depressing the activity of the motor cortex; hence their use in treating epilepsy.

It is relevant to emphasize that, except in full anaesthetic dosage, barbiturates have no analgesic action. For this a suitable analgesic should be used in addition to a barbiturate if an analgesic effect is also desired.

The practitioner is strongly recommended to choose two or three representative barbiturates and to make himself familiar with their particular merits and defects.

Sudden Unilateral Deafness

Q.—*What are the possible causes of unilateral tinnitus and almost complete nerve deafness of sudden onset in an adult? The condition developed, with a subjective "bang" in the affected ear, four months ago and has persisted. A vascular lesion of the cochlea is suspected.*

A.—The most likely cause of a sudden and complete deafness in one ear without vertigo is some toxic infection of the ganglion cells, such as may happen in mumps or as the result of streptomycin intoxication. A vascular accident is possible, but signs of a vestibular disaster (vertigo and vomiting) would also be present. In certain cases of endolymphatic hydrops (Ménière's disease) the distension of the endolymphatic system may continue unrelieved until the membranous system is ruptured with complete and irreversible loss of function. If a detailed otological examination does not reveal any cochlear function, then the likelihood of any return of hearing is remote, though the tinnitus may continue unabated. If hydrops of the labyrinth is suspected, then there is some slight prospect of improvement in hearing if a strict low-sodium and limited fluid diet is followed.

Treatment of Amoebiasis

Q.—*What is the modern treatment of amoebiasis? Is a change of climate likely to make a relapse more probable?*

A.—The drugs of greatest value in the treatment of intestinal amoebic infections are emetine hydrochloride and emetine bismuth iodide.

In acute amoebic dysentery it is probably best to commence with two or three intramuscular injections of 1 gr. (65 mg.) of emetine hydrochloride; this usually brings the diarrhoea under control rapidly. Treatment is continued with emetine bismuth iodide (E.B.I.) given in keratin-coated capsules and in doses of 3 gr. (200 mg.) nightly for ten nights. In order to combat the nausea which is commonly caused by this drug, 1–2 gr. phenobarbitone is administered half an hour before the E.B.I. is given. Most patients will then sleep through the period during which the nausea would have been experienced. Injections of emetine may be omitted in the case of cyst-passers who are not suffering from dysenteric symptoms. This treatment has been shown to eradicate 90% of infections, and there is no satisfactory evidence that superior results are obtained with any of the antibiotics or by following the course of E.B.I. with one of oxyquinoline compounds, arsenic, or enemata containing amoebicidal substances.

At the conclusion of the last war treatment was commonly commenced with penicillin on the assumption that secondary infection might thereby be controlled. The results were disappointing, and it is now no longer commonly employed. More recently aureomycin has been used, particularly in America. Encouraging preliminary reports were made, and there is no doubt that the drug will bring an acute attack of dysentery under control; 50% of cases, however, relapse within eight weeks of completion of treatment. Clinical trials with terramycin are at present being carried out, and it seems safe to say that it is more effective than aureomycin, though it is doubtful whether it is as effective as emetine and emetine bismuth iodide. There is some evidence that resistant cases may respond better to terramycin or aureomycin given in conjunction with emetine bismuth iodide than they do to the latter given alone. Resistant infections in which organisms persist in the faeces in spite of treatment are, however, very seldom encountered. Cases in which stool examination is negative after treatment are not uncommonly erroneously labelled resistant because of persisting bowel symptoms. In these, however, the disturbance is usually of a functional nature rather than the result of persisting infection.

A change of climate is not likely to make a relapse of amoebic dysentery more probable. The only important consideration in this respect is whether the change in climate entails a change in environment leading to a greater chance of reinfection.

Hormone Treatment of Anorexia Nervosa

Q.—*Has cortisone or A.C.T.H. any place in the treatment of anorexia nervosa?*

A.—In so far as anorexia nervosa is a primary psychopathic state, as its name implies, there would appear to be no specific indication for cortisone or A.C.T.H. It may be that in the later and more severe phases of the disorder there is a secondary disturbance of pituitary and adrenal function, and if the latter could be demonstrated there might be an indication for the use of these hormones. However, it might be thought that in view of their appetite-stimulating effect in non-endocrine states such as rheumatoid arthritis they might be properly used regardless of the primary condition. However, Dr. C. F. Rolland recently reported at a meeting of the Nutritional Society (*Journal*, March 14, p. 613) that such attempts have not been successful and any gain in weight was due to the retention of salt and water. It would therefore appear better to rely on the more conventional methods of removal from the usual surroundings to hospital or nursing-home, reassurance, encouragement and intelligent persuasion, and suggestion.

Dutch Cheese Rind

Q.—*Of what is the waxy rind of a Dutch cheese composed? Is it indigestible? My landlady's small boy has developed a taste for it.*

A.—The red Dutch cheeses are first dyed with aniline dye and then coated with indigestible wax, usually paraffin. Eating the rind will probably do little harm to the boy, but neither will it do him much good.

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